



Installation and maintenance instructions

Condensing gas boiler
Logamax plus GB162-80/100



Builder

Product description

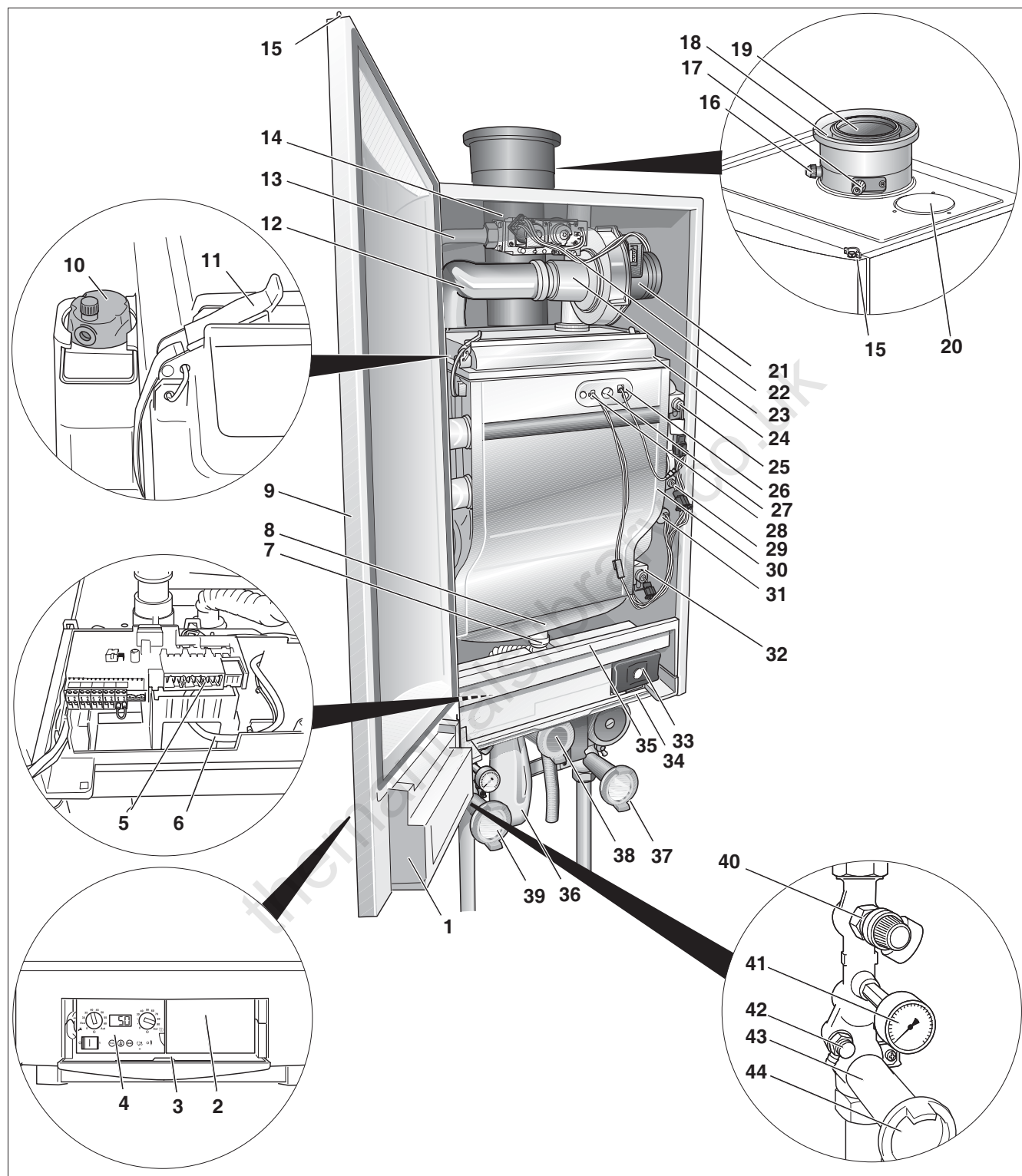


Fig. 1 Logamax plus GB162-80/100 with pump group

- Item 1:** BC10 basic controller holder
- Item 2:** Installation option for room controller, e.g. RC30
- Item 3:** Cover with user manual compartment
- Item 4:** Logamatic BC10 basic controller, can be expanded e.g. by the RC30 room controller
- Item 5:** Connection box (low-voltage and 230V connections)
- Item 6:** Fan harness and mains lead of the pump
- Item 7:** Condensate drain outlet
- Item 8:** Condensate collector
- Item 9:** Boiler front door
- Item 10:** Automatic air vent
- Item 11:** Quick clip fasteners
- Item 12:** Air inlet pipe
- Item 13:** Gas pipe
- Item 14:** Flue gas pipe
- Item 15:** Door lock
- Item 16:** Flue gas testing point
- Item 17:** Testing point for air intake
- Item 18:** Air intake connection

Pump group (optional accessory):

- Item 37:** Isolating valve, blue (CH boiler return) with pump, drain cock, non-return valve and thermometer
- Item 38:** Gas valve, yellow (GAS)
- Item 39:** Isolating valve, red (CH boiler flow) with drain cock, pressure gauge, thermometer and 4-bar pressure relief valve
- Item 40:** 4-bar pressure relief valve
- Item 41:** Pressure gauge
- Item 42:** Drain valve
- Item 43:** Isolating valve
- Item 44:** Thermometer (optional accessory)

The pump group also includes an insulation cover (see also pump group installation instructions).

- Item 19:** Flue gas connection
- Item 20:** Cover shield
- Item 21:** Fan
- Item 22:** Gas valve
- Item 23:** Venturi
- Item 24:** Burner cover
- Item 25:** Flow temperature sensor
- Item 26:** Ionisation electrode
- Item 27:** Sight glass
- Item 28:** Glow ignitor
- Item 29:** Safety temperature sensor
- Item 30:** Heat exchanger
- Item 31:** Pressure sensor
- Item 32:** Return temperature sensor
- Item 33:** Universal Burner Automatic Version 3 (UBA 3)
- Item 34:** Draw with function module integration options
- Item 35:** Cover shield
- Item 36:** Condensate trap

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1 General

These installation and maintenance instructions apply to the following wall-mounted condensing gas boilers:

- Logamax plus GB162-80
- Logamax plus GB162-100.

The name of the boiler is made up of the following components:

- Logamax plus Type name
- GB Condensing gas boiler
- 162 Type
- 80 or 100 Heating range in kW

The Logamax plus GB162-80/100 is suitable for use as a single boiler or as part of a cascade system.

The following technical documentation is available for the Logamax plus GB162-80/100:

- Installation and maintenance instructions
- User Manual
- Quick Reference User Manual (located in the cover of the control panel)
- Maintenance manual
- Wiring diagram

If you have any suggestions for improvement or have found any discrepancies, please do not hesitate to contact us.

CE label



The appliance complies with the basic requirements of the relevant European directives.

Conformity has been substantiated by the proper documents which - together with the declaration of conformity - are filed with the manufacturer.

Frost protection

The boiler has integrated frost protection.

The frost protection switches the boiler on at a CH flow temperature of 7 °C and switches it off at a CH flow temperature of 15 °C.

The central heating system is not protected against frost.



NOTE

If there is a risk of radiators or pipe sections freezing up, we recommend setting the pump run-over time to 24 hours. See section 13.3, page 93.

Pump test

If the boiler has not been operational for approx. 4 weeks, the pump will automatically run for 10 seconds every 24 hours. This pump test is first carried out for 24 hours when first switched back on.

Important general instructions for use

Only use the boiler in accordance with its designated use and the installation and maintenance instructions. Installation, maintenance and repair must be carried out by competent service engineers (e.g. CORGI registered).

Only use the boiler in conjunction with the accessories and spare parts indicated in the installation and maintenance instructions. Other accessories and consumables may only be used if they are specifically provided for the designated use and if system performance and safety are not affected in any way.

The boiler is suitable for connection to fully pumped, sealed water systems ONLY. Arrangements for draining the system by draining valves must be provided in the installation pipework.

Subject to technical modifications.

As a result of our policy of constant development, there may be small differences between illustrations, functional steps and technical data.

Hand over

Please complete the appropriate sections on completion of the installation and commissioning in the relevant log book and hand it over to the end user.

2 Regulations and directives



NOTE

The country-specific standards and guidelines must be observed for the installation and operation of the heating system!

The specifications on the type plate of the boiler are decisive and must be observed.

About these instructions

These installation and maintenance instructions contain important information about a safe installation, commissioning and maintenance of the Logamax plus GB162-80/100 condensing gas boiler.

These installation and maintenance instructions and the service instructions are intended for competent service engineers (e.g. CORGI registered) who, due to their professional training and experience, are experts at dealing with heating systems and gas installations.

2.1 Regulations and directives

It is a requirement that all gas appliances are installed and serviced by a CORGI registered installer in accordance with the regulations. Failure to install appliances correctly could lead to prosecution. It is in your own interest, and that of safety, to ensure the law is complied with.

It is a requirement and in your own interest, and that of safety that this boiler must be installed by a CORGI registered installer, in accordance with the relevant requirements of the current Gas Safety (Installation and Use) Regulations, Building Regulations, Building Standards (Scotland), Irish Standard (I.S. 820:2000), National and ByLaws of the local water undertaking, current I.E.E. Wiring Regulations (BS.7671) and the relevant British Standard Codes of Practice.

Detailed recommendations are contained in the following British Standard Codes of Practice:

Directives

- 90/396/EEC gas appliance directive
- 92/42/EEC boiler efficiency directive
- 73/23/EEC low voltage directive
- 89/336/EEC EMC directive
- 97/23/EC pressure equipment directive
- any relevant requirement of the local authority

Other relevant standards are:

BS.1212

BS.6281: part 1

BS.6282: part 1

BS.6283: part 4

BS.4814: Pressure vessels

BS.5449: Forced circulation hot water systems

BS.5546: Installation of gas hot water supplies for domestic purpose (2nd. Family Gases)

BS.6880: Code of practice for low temperature hot water heating systems for output greater than 45 kW

BS.6891: Low pressure installation pipes

BS.6644: Specification for Installation of gas-fired hot water boilers of rated inputs between 70 kW (net) and 1.8 MW (net)

cp 342.2: centralised hot water supply (2nd and 3rd family gases)

CISBE: Guide Reference sections B7, B11 and B13

IGE/UP/2: Gas installation pipework and compressors on industrial and commercial premises

IGE/UP/10: Installation of gas appliances in industrial and commercial premises, part 1: flued appliances

Health and & Safety Document No. 635.

Ventilation Requirements

BS.5440-2:2000 (up to a total boiler rating of 70 kW input)

BS.6644 (Total boiler rating of 70kW to 2000 kW input)

The manufacturer's notes must not be taken, in any way, as overriding statutory obligations.

The design and construction of the Buderus wall-mounted condensing gas system boiler conforms to the basic specifications listed in the European directive governing gas-fired appliances 90/396/EEC, and with respect to EN 625, EN 483 and EN 677.



NOTE

Observe the corresponding technical rules and the building supervisory and statutory regulations when installing and operating the system.

**WARNING!**

Keep the control unit housing **CLOSED** when working on water-bearing components.

**NOTE**

The boiler is designed exclusively for heating water as part of a central heating system and/or hot-water system.

**NOTE**

For optimum, long-term reliable functioning of the boiler, and in order to be able to claim under the terms of the manufacturer's warranty. The boiler must be inspected and maintained at least once a year (under normal operating conditions) by a CORGI or ACS registered installation and service engineer.

**NOTE**

When instructions are not followed, warranty is invalid.

**NOTE**

Condensing boilers work more efficiently if the return temperature is as low as possible.

Timber Framed Buildings

If the boiler is to be fitted in a timber framed building it should be fitted in accordance with the Institute of Gas Engineering document **IGE/UP/7:1998** and **BS 5440:1**.

Bathroom Installations

This appliance is rated IP X4D.

The boiler may be installed in any room or internal space, although particular attention is drawn to the requirements of the current IEE (**BS.7671**) Wiring Regulations. In Scotland, the electrical provisions of the building regulations applicable in Scotland, with respect to the installation of the boiler in a room or internal space containing a bath or shower.

If the appliance is to be installed in a room containing a bath or shower then, providing water jets are not going to be used for cleaning purposes (as in communal baths/showers), the appliance can be installed in Zone 3, as detailed in **BS.7671**.

Compartment Installations

A compartment used to enclose the boiler should be designed and constructed especially for this purpose. An existing cupboard or compartment may be used, provided that it is modified for the purpose.

In both cases, details of essential features of cupboard/compartment design, including airing cupboard installation, are to conform to the following:

BS.6798 (No cupboard ventilation is required - see 'Air Supply' for details).

It is not necessary to have a purpose-provided air vent in the room or internal space in which the boiler is installed. Neither is it necessary to ventilate a cupboard or compartment in which the boiler is installed, due to the low surface temperatures of the boiler casing during operation; therefore the requirements of **BS.6798**, **Clause 12**, and **BS 5440:2** may be disregarded.

The permanent clearances required are (see fig. 5 and fig. 6):

in front:	50 mm
below:	0 mm (250 mm with pump group)
right side:	0 mm
left side:	0 mm
above:	30 mm

The position selected for installation **MUST** allow adequate space for servicing in front of the boiler.

See table below:

in front:	550 mm
below:	350 mm
right side:	0 mm
left side:	0 mm
above:	40 mm

In addition, sufficient space may be required to allow lifting access to the wall mounting bracket.

Wall-mounted condensing gas system boilers must only be used with Buderus flue gas systems, which are certified with this type of boiler.

Observe the relevant standards, regulations and legislation of the country or region of final use.



WARNING!

CAUTION

Use this device for its intended purpose only.

**WARNING!**

DANGER!
notes relating to the heating system water.

Thoroughly flush the system before it is filled with water. Use only untreated water or water treatment product such as Sentinel X100 to fill and top up the system. For more information about Sentinel call 0151 420 9563.

When using water treatment, only products suitable for use with Buderus heat exchangers are permitted (e.g. Sentinel X100). Your warranty is at risk if an incorrect water treatment product is used in conjunction with this appliance. For more information, contact Buderus Technical Product Support Department.

It is most important that the correct concentration of the water treatment product is maintained in accordance with the manufacturer's instructions.

If the boiler is used in an existing system any unsuitable additives **MUST** be removed by thorough cleaning.

BS.7593:1992 details the steps necessary to clean a central heating system.

In hard water areas, treatment to prevent lime scale may be necessary - however, the use of artificially softened water is **NOT** permitted.

Under no circumstances should the boiler be fired before the system has been thoroughly flushed.

Do not use artificially softened water.

Only plastic pipework containing a polymeric barrier should be used. Copper pipework must be used for the first 600 mm.

Safe handling of substances

No asbestos, mercury or CFCs are included in any part of the boiler and its manufacture.

2.1.1 Hazard definitions and abbreviations

Hazard definitions

**WARNING!**

DANGER:

Indicates the presence of hazards that will cause severe personal injury, death or substantial property damage.

**CAUTION!**

CAUTION:

Indicates presence of hazards that will or cause minor personal injury or property damage.



NOTICE:

Indicates special instructions on installation, operation or maintenance that are important but not related to personal injury or property damage.

Abbreviations

AB	= Automatic Bypass
AIC	= Air Intake Connection
AV	= Air Vent (automatic)
BCT	= Buderus cylinder thermostat
BDV	= Buderus diverter valve
CB	= Connector Block
CH	= Central Heating
CHF	= Central Heating Flow
CHR	= Central Heating Return
CT	= Cylinder Thermostat
CDO	= Condensate drain outlet
DHW	= Domestic Hot Water
DV	= Diverter Valve
E	= Earth
FGC	= Flue gas Connection
HK1	= Heating circuit 1
HK2	= Heating circuit 2
KIM	= Boiler identification Module
L	= Live
LSV	= Lock Shield Valve
MCW	= Mains Cold Water
N	= Neutral
JB	= Junction Box / RTH Converter
PF	= Pump group Flow
PL	= Permanent Live
PR	= Pump group Return
Prog	= Programmer
PRV	= Pressure relief valve
RT	= Room Thermostat
RV	= ModuLink 250 RF Receiver
T	= Timer
TRV	= Thermostatic Radiator Valve
WC	= Wiring Centre

2.2 Designated use

The boiler may only be used to heat up water for heating systems and/or domestic hot water (DHW) systems.

The boiler can be installed either as a single system or as part of a multiple system (cascade system). A cascade system enables several boilers of this type to be connected together, where a maximum of 8 boilers with a total capacity of 800 kW can be connected together on a floor surface of approx. 2 m².

Special cascade units (accessories) have been developed to enable this boiler to be installed in a cascade system. Every cascade unit includes an installation frame, horizontal headers, connection pipes for the boiler, main gas pipe and vertical low loss header.

Cascade units are available for installing the boilers inline or back-to-back. These cascade units make installing a cascade system easier and less labour intensive. Please contact your dealer or the manufacturer for further information about cascade systems.

The construction and operating behaviour of the boiler are in accordance with the requirements listed:



The appliance complies with the basic requirements of the relevant European directives.

Conformity has been substantiated by the proper documents which - together with the declaration of conformity - are filed with the manufacturer.

2.3 Boiler room



CAUTION!

DAMAGE TO THE INSTALLATION

due to frost.

- Install the heating system in a room which is free from frost.



WARNING!

FIRE HAZARD

due to flammable materials or liquids.

- Do not store any flammable materials or liquids in the direct vicinity of the boiler.



Note

Observe all statutory building regulations applying to the place of installation.



CAUTION!

BOILER DAMAGE

due to contaminated combustion air or contaminated air in the boiler room.

- Never use the boiler in an environment which contains lots of dust or aggressive chemicals. Such as spray shops, hairdresser's shops, agricultural enterprises (manure) or locations where trichlorethylene or hydrogen halides (e.g. contained in aerosols, certain adhesives, solvents or detergents, paints) and other aggressive chemicals are used or stored.
- In such situations you must opt for a room sealed installation.

The boiler can only be mounted to the wall or installed in a cascade system. When installed in a room with thin walls or a thin floor, resonating noise may occur. Install noise reducing parts if required.

2.4 Combustion air flue gas connection

If the boiler is operated dependent on room air, the installation room must have the required air vents. DO NOT obstruct these vents. The air vents must always be free.

2.5 Quality of the heating system water

Thoroughly flush the system before filling it. Use only untreated tap water when filling or topping up the system. The use of dirty water will lead to build-ups of sludge and corrosion, which can in turn result in malfunctioning of the boiler and damage to the heat exchanger.

DO NOT treat the water with products such as pH-adjusting substances (chemical additives), antifreeze or water softeners.

The pH of the heating system water **MUST** be between 7 and 8.5. If this is not the case, please contact Buderus Customer Service before proceeding.



CAUTION!

BOILER DAMAGE

due to corrosion.

- If the boiler is used in systems with gravitation circulation or in open systems, the boiler circuit must be isolated from the rest of the system by means of a (plate-type) heat exchanger.

2.6 Quality of the pipework

When using plastic pipework in the heating system, e. g. for floor heating, it has to be oxygen-tight according to relevant UK-Standards. If the plastic pipes do not comply with these standards, the system parts must be isolated using heat exchangers.

2.7 Maintenance schedule

The activities to be included in an annual inspection and maintenance contract can be found in the service section of this manual (see pages 81 and 91).

If inspection reveals a situation which makes maintenance activities necessary, these activities have to be carried out (see section 12 "Maintenance", page 83).



CAUTION!

DAMAGE TO THE INSTALLATION

due to insufficient or improper cleaning and maintenance.

- Inspect and clean the heating system as required once a year.
- Carry out maintenance as required. Immediately remedy faults. This will avoid further damage to the system!

2.8 Applicability of regulations

Changes or amendments to the regulations also apply at the time of installation and have to be complied with.

3 Safety

Please observe these instructions for your own safety.

3.1 Please observe these instructions

Observe the following instructions when installing and operating the heating system:

- The local building regulations as regards the installation conditions.
- The local building regulations as regards fresh air supply and air exhaust facilities and flue connections.
- The regulations for electrical connections to the power supply.
- The gas utility company rules for connecting the gas burner to the local gas mains.
- The regulations and standards concerning the safety facilities for the DHW/heating system.
- The installation instructions for producers of heating systems.



WARNING!

DANGER OF FATAL ACCIDENT

from explosive fumes. If you smell gas, there is a danger of explosion.

- No naked lights. No smoking.
Do not use lighters!
- DO NOT operate any device that is likely to produce sparks.
Do not operate any electrical switches, including telephones, plugs or doorbells.
- Shut off the main gas supply!
- Open doors and windows.
- Warn the residents but do not ring doorbells!
- Contact the gas utility company from a telephone located outside the building!
- If you can hear gas leaking out, evacuate the building immediately, prevent other persons from entering, and notify the police and fire service immediately (from a telephone OUTSIDE the building).



WARNING!

DANGER OF FATAL ACCIDENT

from explosive fumes.

- Only carry out work on gas pipes and fittings if you are properly registered (CORGI).



WARNING!

DANGER OF FATAL ACCIDENT

due to poisoning.

Dangerous flue gas can escape if the air supply is insufficient.

- Make sure that air vents are not reduced in size or obstructed.
 - The boiler may only be operated after the defect has been remedied.
 - Warn the user of the system of the defect verbally and in writing.
- The condensing gas boiler may only be used with the combustion air/flue gas systems designed and approved specifically for this type of boiler.
 - Note: in certain areas permits are required for the flue gas system and for connecting the condensate water drain to the public sewage network.

3.2 Tools, materials and further equipment

Boiler installation and maintenance requires standard tools for heating, gas and water installation.

In addition you will need:

- a hand truck/cart with a securing strap.

3.3 Recycling

- Dispose of the boiler's packaging material in an environmentally friendly manner.
- Dispose of those components of the heating installation (e. g. boiler or controller) which have to be replaced in an environmentally friendly manner by handing them in at an authorised recycling facility.

4 Transport

This chapter describes how to transport the boiler safely and without damaging it.



CAUTION!

DAMAGE TO THE INSTALLATION

due to impacts.

The boiler contains parts which can be damaged by impacts.

- During further transport all parts must be protected against impacts.
- Observe the transport symbols and instructions on the packaging.



CAUTION!

DAMAGE TO THE INSTALLATION

due to external contamination.

Proceed as follows if the boiler has been unpacked but is not put into operation yet:

- Protect the boiler connections against pollution by leaving the protective covers on the connections.
- Cover the flue gas injectors at the top of the boiler with plastic film.

4.1 Lifting and carrying the boiler

To lift and carry the boiler, place one hand at the bottom of the boiler and the other hand on its front (fig. 2).

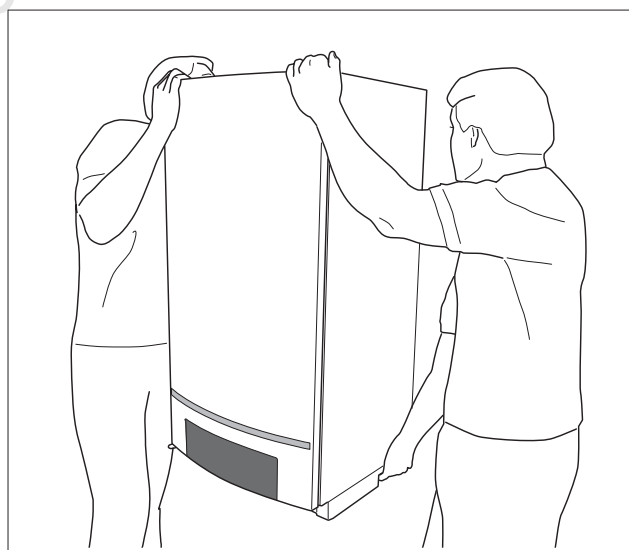


fig. 2 Lift and carry the boiler correctly

**DAMAGE TO THE UNIT**

due to it being lifted and carried incorrectly.

- Do not hold the boiler by the door over the control panel (fig. 3) to lift and carry it.

4.2 Transporting the boiler with a trolley

**DANGER OF INJURY**

due to improperly secured boiler.

- Use proper transport equipment, such as a trolley with a securing strap, a stair-climbing hand truck or a convertible hand truck to transport the boiler.
- Secure the boiler on the transportation equipment to prevent it falling off.
- Place the boiler in its packaging on the handtruck and secure it with a strap if necessary.
- Transport the boiler to the installation location.

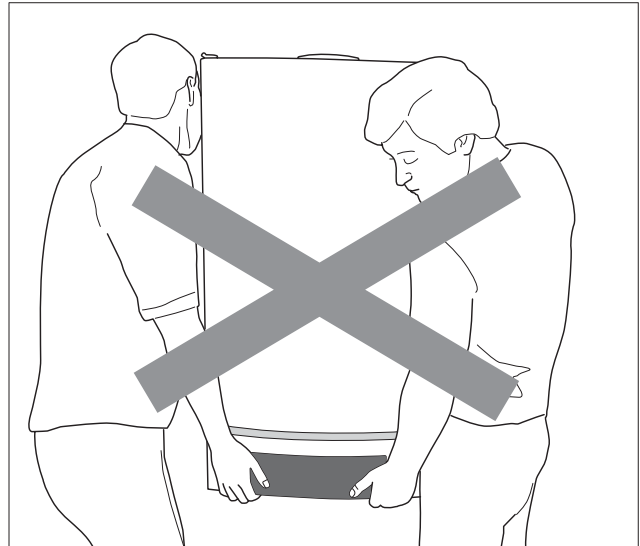


fig. 3 Incorrect way of lifting and carrying the boiler

5 Items supplied with boiler

The boiler is delivered factory-assembled.

- Check that the packaging is intact upon delivery.
- Check that all items have been supplied with the boiler.

Parts	Qty	Packaging
Boiler with casing	1	1 box
Wall bracket	1	
Condensate trap with condensate trap hose	1	
Technical documents set	1	
Flow and return union nuts with sealing rings	2	
Screws and plugs for wall bracket	2	
Union nut for gas connection	1	

table 1 Items supplied with Logamax plus GB162-80/100

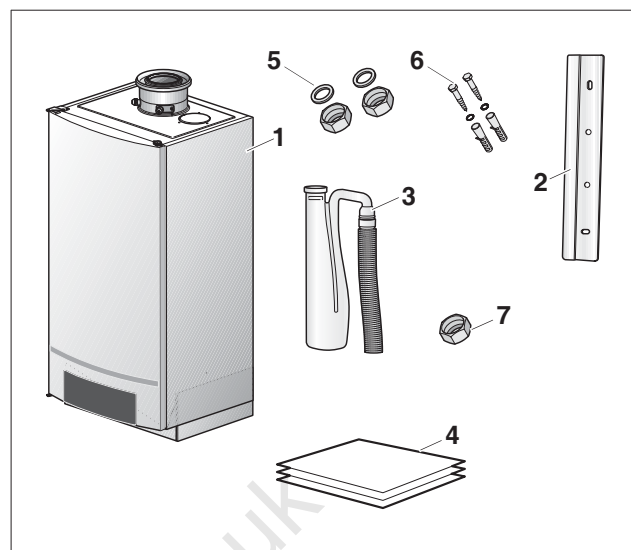


fig. 4 Items supplied with unit

Item 1: Boiler assembly

Item 2: Wall bracket

Item 3: Condensate trap with condensate trap hose

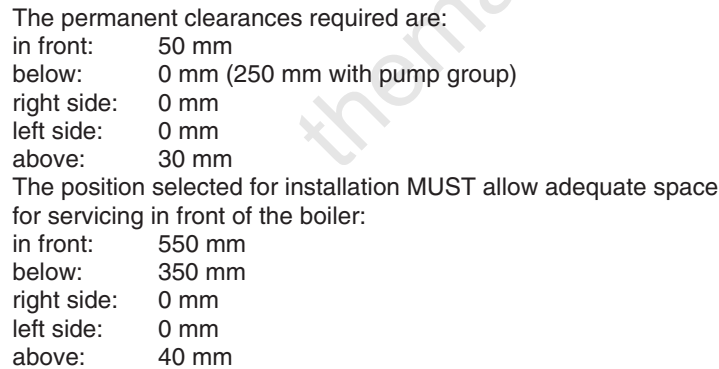
Item 4: Technical documents set

Item 5: Flow and return union nuts with sealing rings

Item 6: Screws and plugs for wall bracket

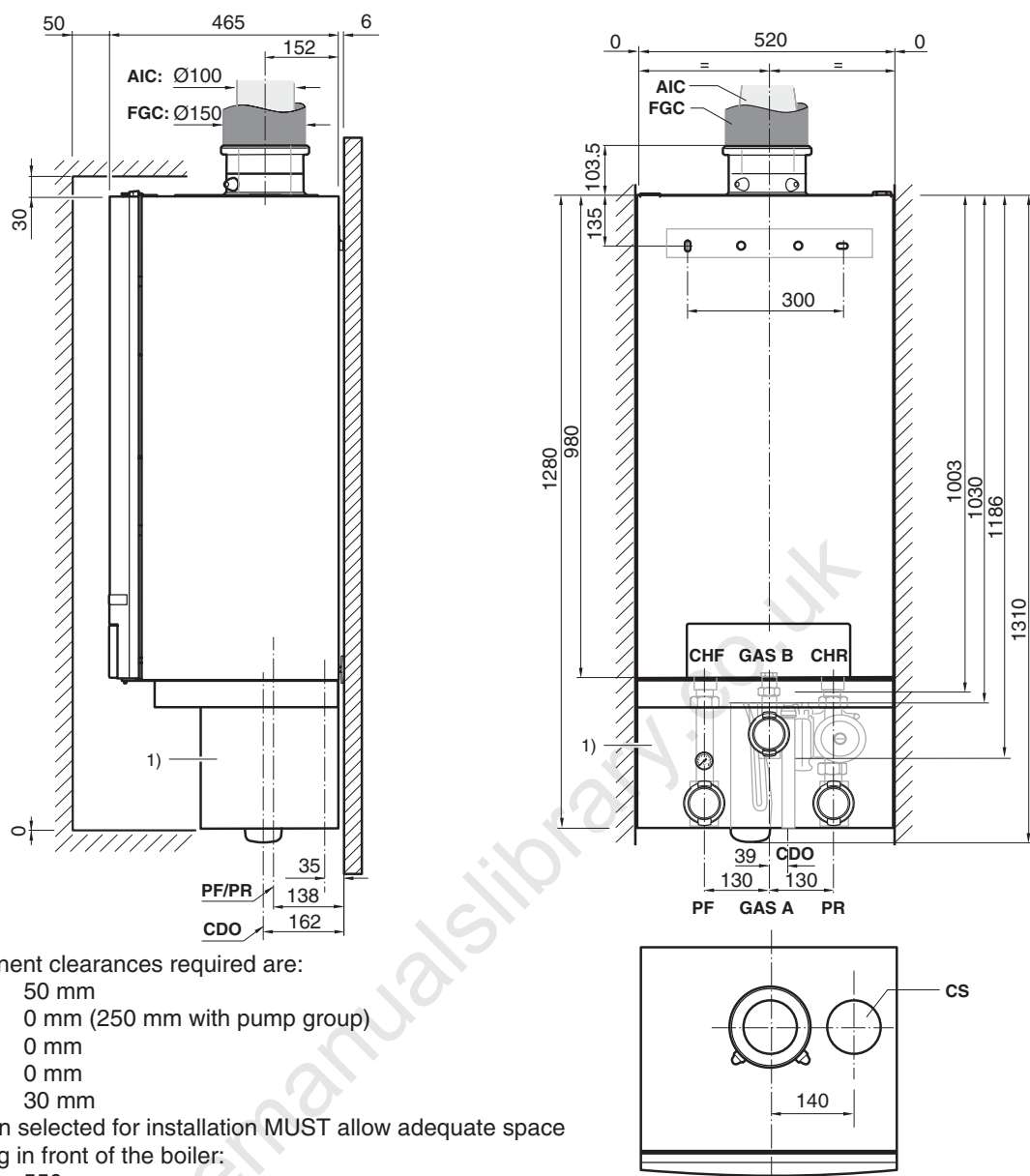
Item 7: Union nut for gas connection

6



fig

- | | |
|---------|---|
| CDO | = Condensate drain outlet; Ø 24 mm O/D |
| CHF | = CH (boiler) flow; G1½" union nut with female thread |
| CHR | = CH (boiler) return; G1½" union nut with female thread |
| CS | = Cap (DO NOT remove; not used in UK) |
| FGC/AIC | = Flue gas/air intake connection Ø 100/150 |
| GAS | = Gas connection to boiler; Rp1" female thread |



The permanent clearances required are:

in front: 50 mm
 below: 0 mm (250 mm with pump group)
 right side: 0 mm
 left side: 0 mm
 above: 30 mm

The position selected for installation MUST allow adequate space for servicing in front of the boiler:

in front: 550 mm
 below: 350 mm
 right side: 0 mm
 left side: 0 mm
 above: 40 mm

fig. 6 Dimensions and connections with pump group (dimensions in mm)

¹ The pump group is an accessory which has to be ordered separately.

CDO	= Condensate drain outlet; Ø 24 mm O/D
CHF	= Boiler flow; G1½" union nut with female thread
CHR	= Boiler return; G1½" union nut with female thread
CS	= Cap (DO NOT remove; not used in UK)
FGC/AIC	= Flue gas/air intake connection Ø 100/150
GAS B	= Gas connection to boiler; Rp1" female thread
GAS P	= Gas connection to pump group; Rp1" female thread
PF	= Pump group flow; G1½" male thread, flat seal
PR	= Pump group return; G1½" male thread, flat seal

7 Installation

This section explains how to install the boiler in a professional manner.

7.1 Installing the boiler

Observe the installation distances of the concentric flue gas system in the separate flue gas system manual.

- Before starting installation check that the carrying capacity of the wall is sufficient for the boiler weight.



CAUTION!

DAMAGE TO THE INSTALLATION

- DO NOT remove the polystyrene foam bottom slab, otherwise the connection injectors might be damaged.
 - Do not lift the boiler by holding it by the door over the BC10 see paragraph 4.1.
 - During installation work, cover the boiler and the flue gas adapter to prevent site dirt from entering.
- Remove the packaging and dispose of it in an environmentally manner.
 - Measure the installation height (see section 6 "Dimensions of boiler", page 16).
 - Mark out both holes using the wall bracket (fig. 7, **step 1**) using a spirit level.
 - Drill 2 holes in the wall (fig. 7, **step 2**).
 - Insert the 2 enclosed plugs in the drilled holes (fig. 7, **step 3**).
 - Install the wall bracket, using the 2 enclosed screws (fig. 7, **step 4**).
 - With two people, lift the boiler by holding it by its back and by the transport rail at its bottom and install it on the wall bracket (fig. 2, page 13).

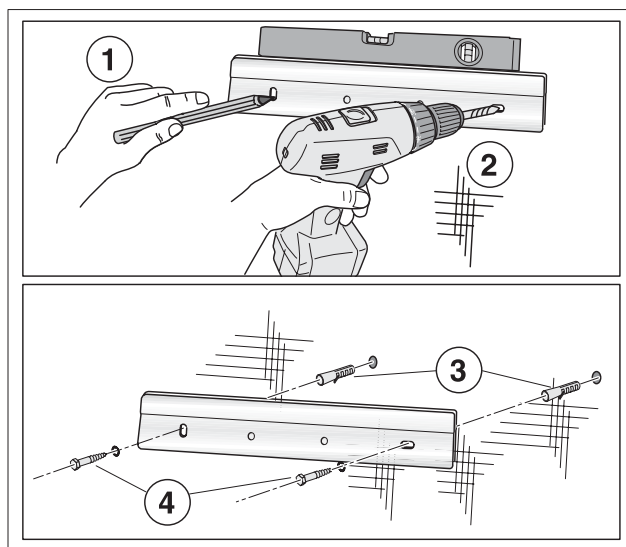


fig. 7 Installing the wall bracket

- Slide the boiler into place (fig. 8).

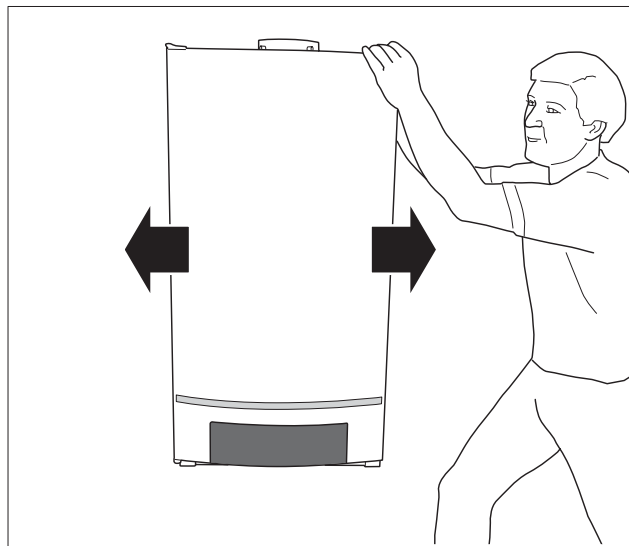


fig. 8 Sliding the boiler

- Level the boiler using the set screw and a spirit level (fig. 9).

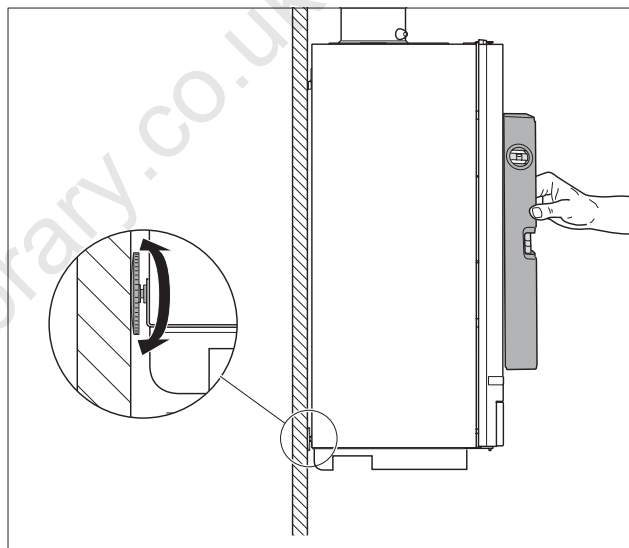


fig. 9 Aligning the boiler with the set screw

- Remove the protective covers from the bottom of the boiler (fig. 10).



NOTE

Some residual water from final testing may leak away.

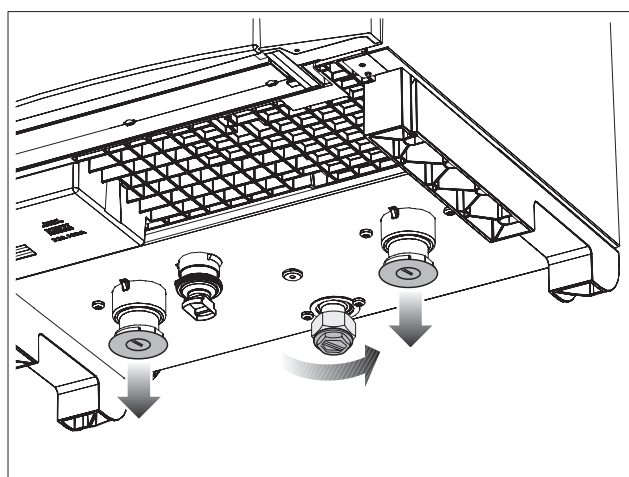


fig. 10 Removing the covers

7.2 General connection of mains water and gas components

7.2.1 General

The water and gas connections to the boiler can be made in either of two ways:

- using a pump group (fig. 11) (accessory)
- without a pump group.

The circulation pump is not factory-installed in the boiler. This pump is included in the pump group (accessory).

If you do not make use of a pump group, you have to install a separate circulation pump under the boiler. This pump must be selected so that the volume flow through the boiler is sufficient to handle the maximum boiler capacity.

Correct pump selection see section 7.2.9 "Selecting and installing the pump", page 23.

The pump group has been developed specifically for this boiler and has already been fitted with the correct pump.

The pump group also includes various fittings, such as service fittings, a pressure relief valve, a pressure gauge, a gas valve etc. This makes installing the appliance easier to overcome resistance in the heating circuit.

Both installation methods are described below.

- Decide whether you would like to connect the heating device with or without a pump group. If you don't use our pump group, you have to calculate a separate pump. Make sure, that the pump is large enough, for the flow to overcome resistance in the heating circuit.

7.2.2 Install the water and gas connections to the boiler using a pump group (accessory)

The central heating system should be installed in accordance with **BS.6798** and, in addition, for smallbore and microbore systems, **BS.5449** or EN 12823.

The gas installation must be installed in accordance with **BS.6891**.

- Install the pump group on the boiler in accordance with the enclosed installation instructions.



CAUTION!

Do not use galvanised radiators or pipes.

WARNING!

7.2.3 Install the water and gas connections to the boiler without a pump group

- Connect all pipes making sure that they are not bent or twisted to cause any stress.

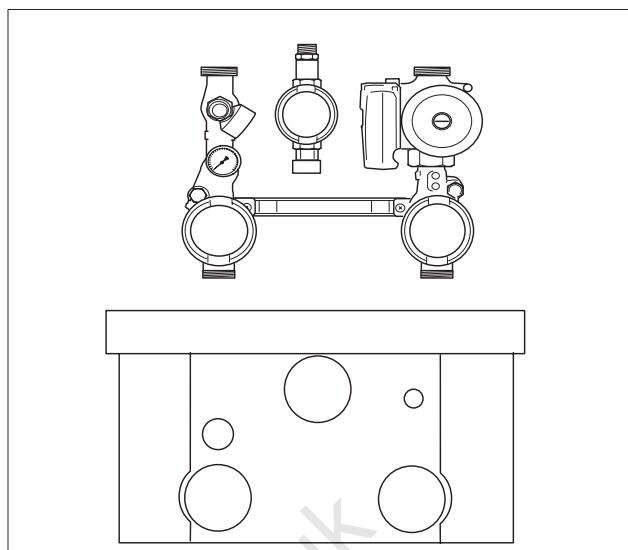


fig. 11 Pump group (accessory)

**CAUTION!**

Do not use galvanised radiators or pipes.

WARNING!

- Make sure that the connections are tight and carry out a gas and water leakage test after completing the connection work.

**DANGER OF FATAL ACCIDENT**

from explosive fumes.

WARNING!

- Only carry out work on gas pipes and fittings if you are a Corgi or ASC-registered.

7.2.4 Installing the gas connection

**DANGER OF FATAL ACCIDENT**

from explosive fumes.

WARNING!

- Make sure that the factory-fitted flat rubber seal is located in the threaded connection (boiler side) (fig. 12, see detailed picture).

The gas installation must be installed in accordance with **BS.6891**.

**CAUTION!**

Pipework from the meter to the boiler **MUST** be of adequate size, generally at least Ø22 mm.

WARNING!

The complete installation **MUST** be tested for gas leakage and purged as described in **IGE/UP/1b**.

- Install the gas valve (fig. 13, **item 1**) onto the gas pipe. Use a gas valve with a minimum diameter of 1".
- Connect the main gas pipe to the gas connection (fig. 13, **item 2**) making sure it is not under stress. Use a gas pipe of at least Ø22 mm.

**NOTE**

We advise you to integrate a gas filter in the gas pipe.

- Make the gas connection according to the country-specific standards and regulations.
- Carry out gas leak test on gas connection using leak detection spray and purged as described in **IGE/UP/1b**.

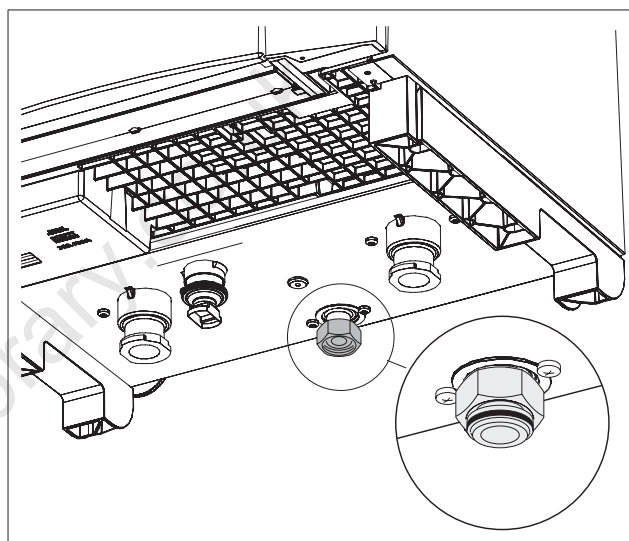


fig. 12 Rubber seal

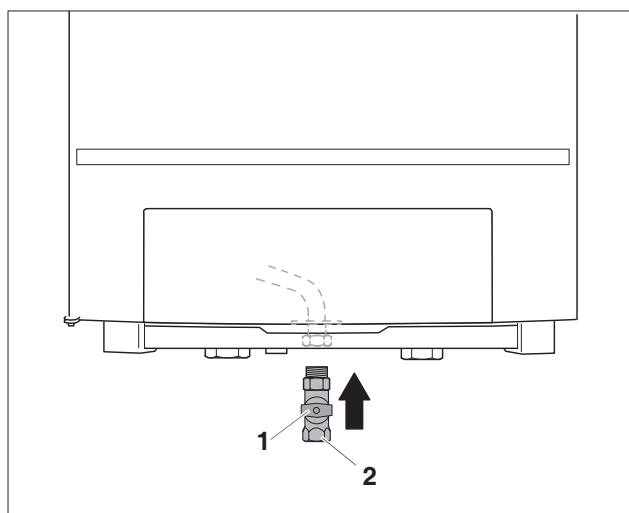


fig. 13 Making the gas connection

Item 1: Gas isolating valve

Item 2: Gas connection

7.2.5 Installing the heating flow and return pipe

The central heating system should be installed in accordance with **BS.6798** and, in addition, for smallbore and microbore systems, **BS.5449** or **EN 12823**.



NOTE

When using plastic pipes, observe the supplier's instructions - especially those referring to recommended jointing techniques and the notes relating to the heating system water on page 9.



NOTE

To prevent contamination in the heating system we recommend you to integrate a dirt filter (fig. 14, **item 10**) in the return pipe, near the boiler. In an old system it is a requirement to install a dirt filter.

- Install shut-off valves to enable filter cleaning immediately upstream and downstream of the dirt filter.
- Connect the flow pipe with a flat rubber seal installed to the CHF (CH boiler flow) connection (fig. 14, **item 1**) making sure it is not under stress. Use a flow pipe with a minimum diameter of 1½".
- Connect the return pipe with a flat rubber seal installed to the CHR (CH boiler return) connection (fig. 14, **item 2**) making sure it is not under stress. Use a return pipe with a minimum diameter of 1½".

Installing the differential pressure controller

In situations where there is no low less header, installing a bypass with a differential pressure controller would not be required.

If a low less header is present, it may be required - depending on the situation - to install a bypass with a differential pressure controller to the secondary side of the low less header. This serves to protect the secondary pump against overheating as a result of insufficient flow.

7.2.6 Installing the isolating valves

- Install a isolating valve for maintenance and repair purposes in both the boiler flow and return circuits (fig. 14, **item 3**). Use isolating valves with a minimum diameter of 1½".

7.2.7 Installing the drain cock

- Connect a drain cock in the return circuit (fig. 14, **item 4**).

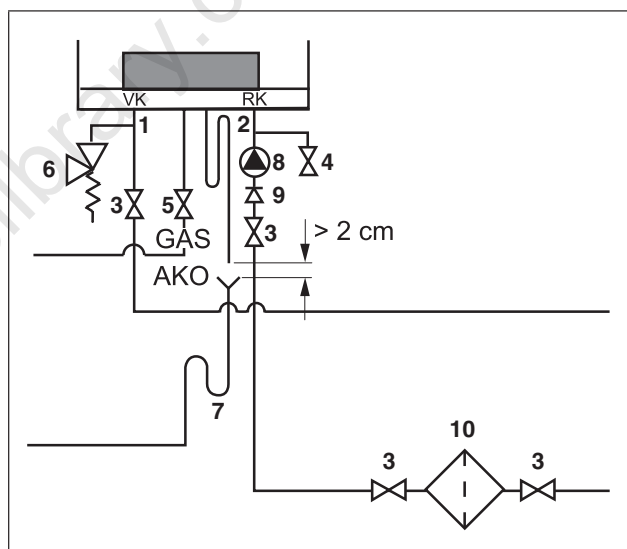


fig. 14 Connecting the boiler flow and return

Item 1: CH boiler flow

Item 2: CH boiler return

Item 3: Isolating valves

Item 4: Drain cock

Item 5: Gas valve

Item 6: Pressure relief valve

Item 7: Condensate trap

Item 8: Pump

Item 9: Non-return valve

Item 10: Dirt filter

7.2.8 Installing a pressure relief valve



CAUTION!

DAMAGE TO THE INSTALLATION

To prevent the pressure in the heating system from becoming excessively high, a pressure relief valve is required.

- Install a 4-bar pressure relief valve (fig. 15, **item 6**) with a minimum passage of 1" in the flow circuit. Make sure that the pressure relief valve is always installed between the boiler and the isolating valve, so that the boiler will always be in contact with the pressure relief valve, even if the isolating valves are closed.

7.2.9 Selecting and installing the pump

- Select a pump according to the hydraulic boiler resistance specified in table 4 or in the curve in fig. 139 on page 106.
- When using the curve take the minimum required volume flow into consideration according to table 2.
- When selecting the pump, take the maximum volume flow of the boiler according to table 3 into consideration.



NOTE

Select a pump with a residual head of at least 200 mbar at the minimum required volume flow (table 3).

Logamax plus GB162-80	Logamax plus GB162-100
3,600	4,300

table 2 Minimum required volume flow [l/h] at $\Delta T = 20\text{ K}$

Logamax plus GB162-80	Logamax plus GB162-100
5,700	5,700

table 3 Maximum volume flow [l/h] at $\Delta T = 20\text{ K}$

Logamax plus GB162-80	Logamax plus GB162-100
225	320

table 4 Resistance over the boiler at the minimum required volume flow [mbar]

- Install the pump (fig. 15, **item 8**) in the return circuit (fig. 15, **item 2**).

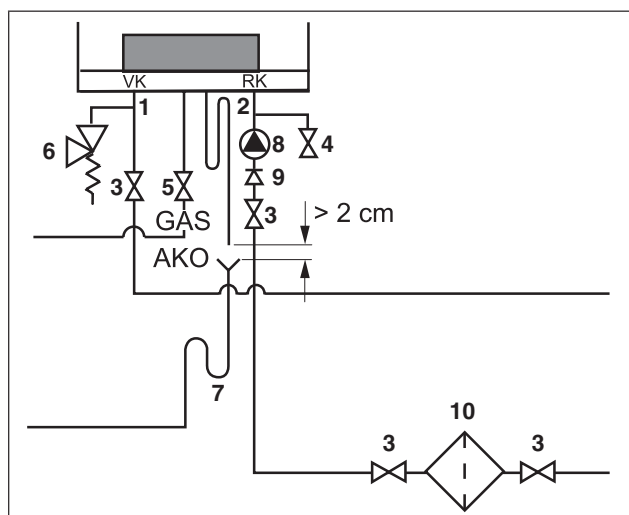


fig. 15 Connecting

- Item 1: CH boiler flow
- Item 2: CH boiler return
- Item 3: Isolating valves
- Item 4: Drain cock
- Item 5: Gas valve
- Item 6: Pressure relief valve
- Item 7: Condensate trap
- Item 8: Pump
- Item 9: Non-return valve
- Item 10: Dirt filter

7.2.10 Installing the condensate trap

**DANGER OF FATAL ACCIDENT**

due to poisoning.

WARNING!

- If the condensate trap is not filled with water, flue gas can escape and put people's lives at risk.
- Fill the condensate trap (supplied with the boiler) with water (fig. 16).



fig. 16 Filling the condensate trap with water

- Connect the condensate trap (fig. 17, **item 1**) to the condensate drain outlet (CDO).

**NOTE**

The condensate trap has a bayonet connector. After inserting it, the condensate trap must be turned clockwise through $\frac{1}{4}$ rotation until it clicks into place.

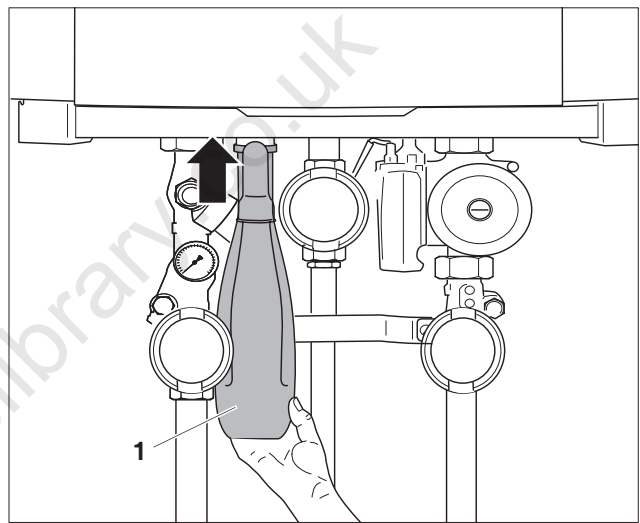


fig. 17 Installing the condensate trap

Item 1: Condensate trap

- Connect the condensate trap hose (fig. 18, **item 3**) and the rubber sleeve (fig. 18, **item 2**) to the condensate trap (fig. 18, **item 1**).

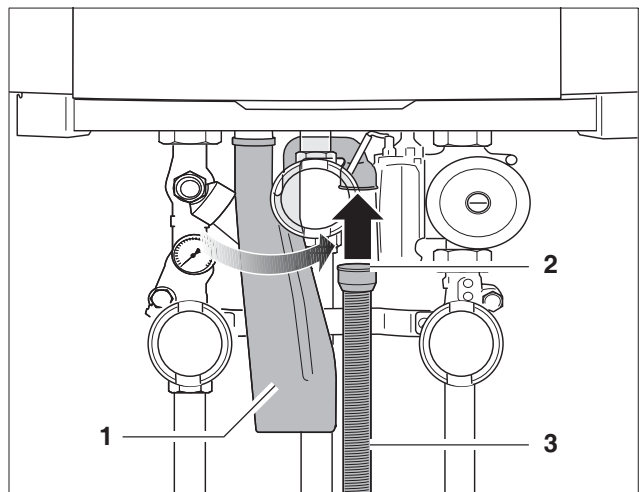


fig. 18 Installing the condensate trap hose

Item 1: Condensate trap

Item 2: Rubber sleeve

Item 3: Condensate trap hose

7.2.11 Condensate removal

Positioning and termination of the condensate drain pipe

The condensate pipe should run and connected to the internal sewage pipe in the house or waste pipe. Alternatively, the condensate can be discharged into the rainwater system if connected to a foul water draining system, or into a purpose-made soak away (condensate absorption point).

All connecting drainage pipework should generally have a fall of at least 2.5° to the horizontal, or approximately 50 mm per metre of pipe run. If this is can-not be achieved, consider the use of a sewage pump.

**WARNING!**

Any external run must be insulated with water proof insulation.

It should be noted that the connection of a condensate pipe to a drain may be subject to local building controls.

Material for condensate

**NOTE**

Ensure that the condensate trap is filled with water.

The condensate drainage pipe should be run in a standard drain pipe material, e.g. PVC (polyvinyl chloride), PVC-U (unplasticized polyvinyl chloride), BS (acrylonitrile-butadienestyrene), PP (polypropylene polypropylene) or PVC-C (cross-linked polyvinyl chloride).

Any internal pipework should be of a diameter to match the requirements of the condensate exit pipe on the appliance.

Termination to internal pipe

The condensate drain pipe should have a minimum outside diameter of Ø21.5 mm with no length restriction. It should incorporate a trap with a 75 mm condensate seal and be connected to the stack at a point at least 450 mm above the invert of the stack. **The trap built into the boiler will provide this 75 mm (fig. 19) condensate seal.**

The minimum distance between the condensate trap and the condensate drain pipe is 2 cm. An air gap should be maintained between the boiler condensate trap and the condensate pipework.

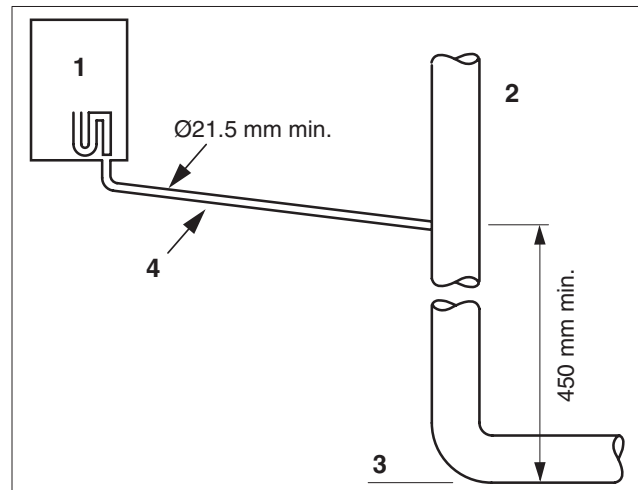


fig. 19 Termination of condensate drain pipe to internal pipe

Item 1: boiler

Item 2: internal soil and vent pipe

Item 3: invert

Item 4: no length restriction

External termination via internal branch (e.g. sink waste)

The condensate drain pipe should have a minimum outside diameter of Ø21.5 mm with no length restriction. The connection should preferably be made downstream of the sink waste trap. If the connection is only possible upstream, then an air break is needed between the two traps. This is normally provided by the sink waste pipe (see fig. 20 and 21).

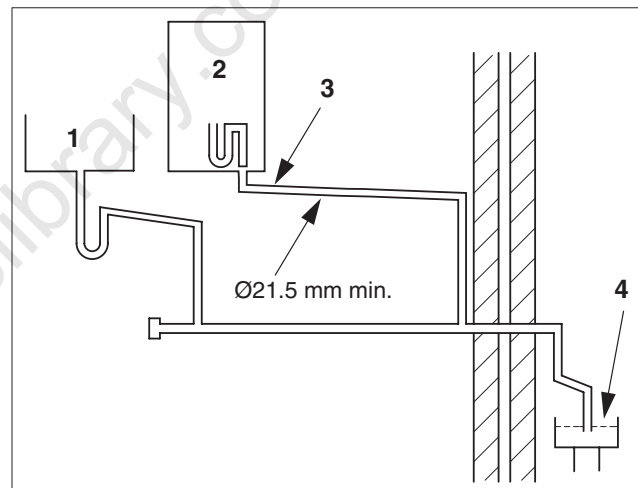


fig. 20 Internal termination of condensate drain pipe to external waste point

Item 1: sink

Item 2: boiler

Item 3: no length restriction

Item 4: open end of pipe direct into drain, below ground but above water level

An air gap should be maintained between the boiler condensate trap and the condensate pipework.

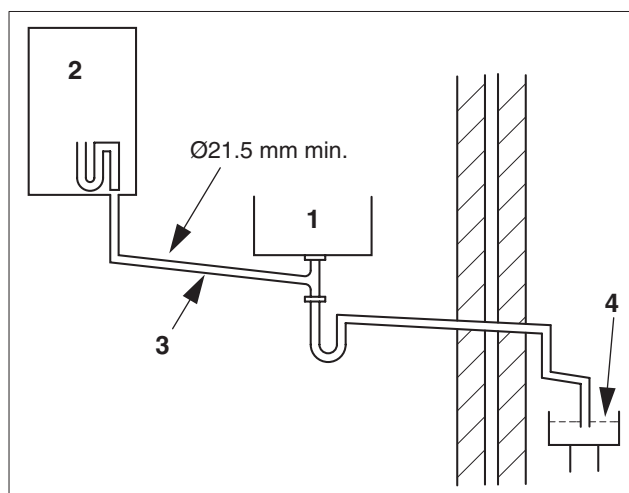


fig. 21 External termination of condensate drain pipe via internal discharge branch (e.g. sink waste – proprietary fitting) and condensate trap

Item 1: sink

Item 2: boiler

Item 3: no length restriction

Item 4: open end of pipe direct into drain, below ground but above water level

Condensate absorption point

The condensate drain pipe should have a minimum outside diameter of Ø21.5 mm and the external pipe length should not be more than 3 m. The condensate absorption point should be sited in a convenient position as close as possible to the boiler but not in the vicinity of other services. See fig. 22 for information.



NOTE

When discharging condensate to an outside drain caution must be taken to ensure blockage cannot occur during freezing conditions. If this is likely to occur, the use of a condensate trap is recommended.

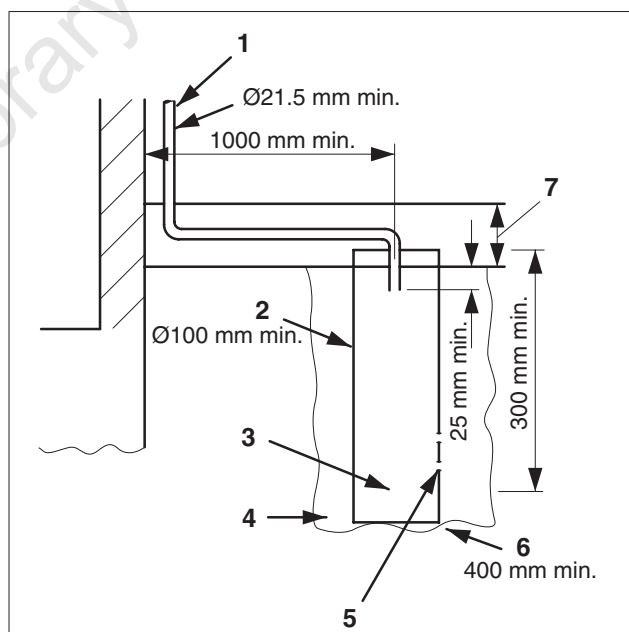


fig. 22 External termination of condensate drain pipe to absorption point

Item 1: external length of pipe 3m max.

Item 2: plastic tube

Item 3: bottom of tube sealed

Item 4: limestone chippings

Item 5: two rows of three 12 mm holes at 25 mm centres, 50 mm from bottom of tube and facing away from house

Item 6: hole depth

Item 7: ground (either/or)

7.2.12 Connecting the condensate drain pipe

- Connect the condensate drain pipe to the condensate trap (fig. 23, **item 1** and fig. 24, **item 1**).

Observe the following regulations:

- The (local) waste water disposal regulations.
- The condensate trap in the connection kit must not be permanently connected to the condensate drain pipe. The minimum distance between the condensate trap and the condensate drain pipe is 2 cm.

An air gap should be maintained between the boiler condensate trap and the condensate pipework.

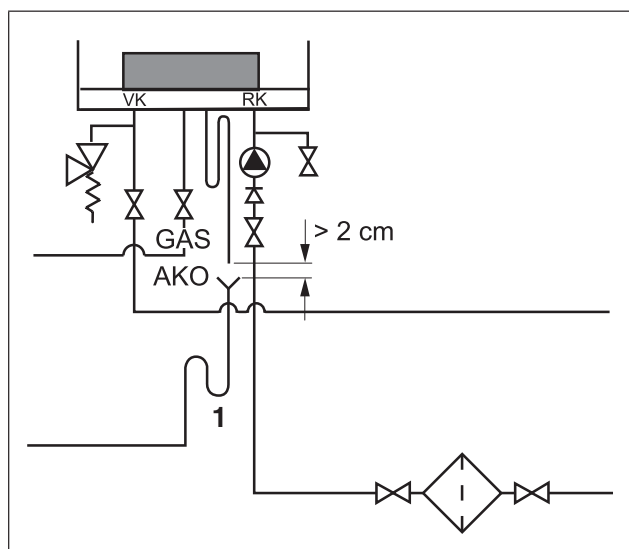


fig. 23 Connecting the condensate trap

Item 1: Condensate trap

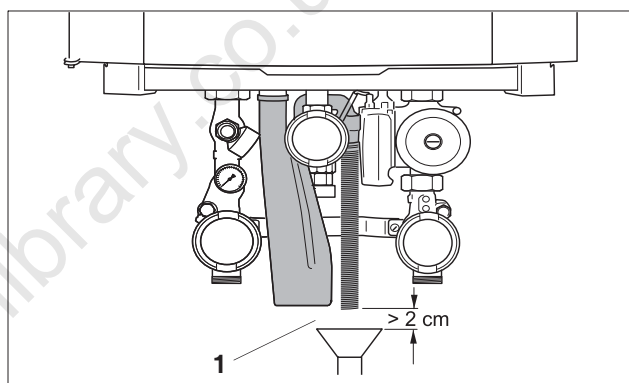


fig. 24 Condensate drainage pipe

Item 1: minimum distance > 2 cm

7.2.13 Connecting the expansion vessel in a single-boiler system



CAUTION!

DAMAGE TO THE INSTALLATION

due to faulty pressure relief valve.

- The expansion vessel must be of sufficient capacity.
- Connect the expansion tank to the boiler return (CHR). If a non-return valve is available: connect the expansion vessel to the CH-side of the non return valve in the return circuit (fig. 25, **item 1**).

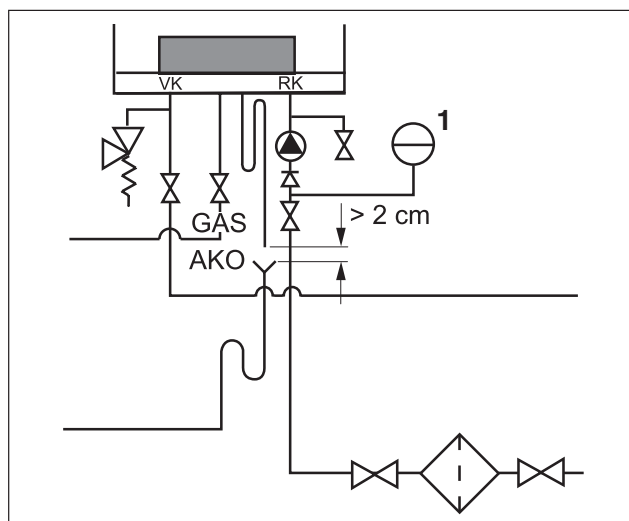


fig. 25 Connecting the expansion vessel in a single-boiler system

Item 1: Expansion vessel

7.3 Flue Installation

7.3.1 Siting the flue terminal

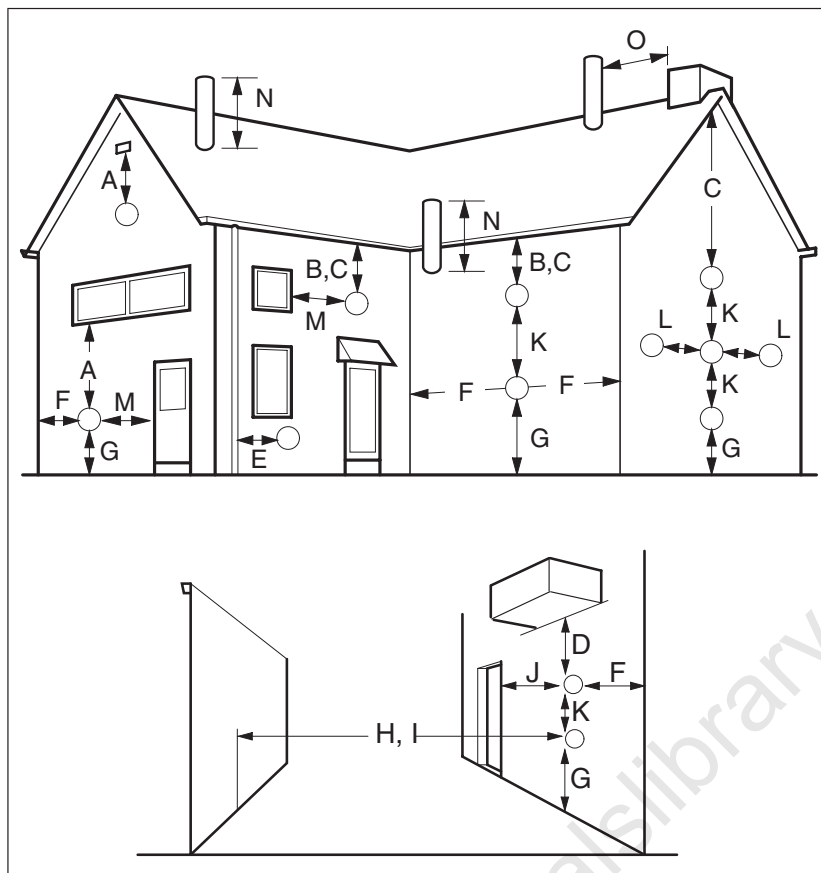


fig. 26 Flue terminal position

Terminal Position	Minimum Spacing
A. Directly below, above or alongside an opening window, air vent or other ventilation opening	300 mm
B. Below guttering, drain pipes or soil pipes	200 mm
C. Below eaves	200 mm
D. Below balconies or a car port roof Not recommended!	200 mm
E. From vertical drain pipes or soil pipes	150 mm
F. From internal or external corners	300 mm
G. Above adjacent ground, roof or balcony level	300 mm
H. From a surface facing the terminal	600 mm
I. From a terminal facing a terminal	1200 mm
J. From an opening in a car port (e.g. door or window) into dwelling. Not recommended!	1200 mm
K. Vertically from a terminal on the same wall	1500 mm
L. Horizontally from a terminal on the wall	300 mm
M. Adjacent to opening	300 mm
N. Above intersection with roof	300 mm
O. From a vertical structure on the roof	500 mm

table 5 Balanced flue terminal position

The flue must be installed in accordance with the recommendations of **IGE UP10**.

Plumbing will occur at the terminal so terminal positions where this could cause a nuisance should be avoided.

The air supply and the flue gas exhaust must meet the applicable general regulations. Please consult the instructions provided with the flue terminal kits prior to installation.

The boiler **MUST** be installed so that the terminal is exposed to external air.

It is important that the position of the terminal allows the free passage of air at all times.

Minimum acceptable spacing from the terminal to obstructions and ventilation openings are specified in table 5.

If the lowest part of the terminal is less than 2 metres above the level of the ground, balcony, flat roof or place to which any person has access, the terminal must be protected by a guard.

Ensure that the guard is fitted centrally.

The flue assembly shall be so placed or shielded as to prevent ignition or damage to any part of the building.

The flue outlet duct and the terminal of the boiler MUST NOT be closer than 25 mm to combustible material. Detailed recommendations on the protection of combustible material are given in **IGE UP10**.



NOTE

It is very important to ensure, that products of combustion discharging from the terminal cannot re-enter the building or any other adjacent building. Through ventilators, windows, doors, other sources of natural air infiltration, or forced ventilation/air-conditioning.

If this could occur the appliance MUST be turned off (with the owner's permission), and labelled as unsafe until corrective action can be taken.



WARNING!

DANGER!

Only use Buderus flue gas systems. As other flue gas systems are not tested with this appliance.

7.3.2 Air supply and flue gas exhaust in a room sealed installation

A ventilation cover is integrated into the condensing gas system boilers. This cover houses a number of components, such as the burner and the heat exchanger. Since this ventilation cover is part of the air supply system, it is vital that it is always installed correctly.

To ensure optimal operation, the appliances must be connected to a Buderus horizontal or vertical flue terminal. These terminals have been developed specifically for Buderus condensing gas boilers and have been comprehensively tested for trouble free operation when correctly installed.

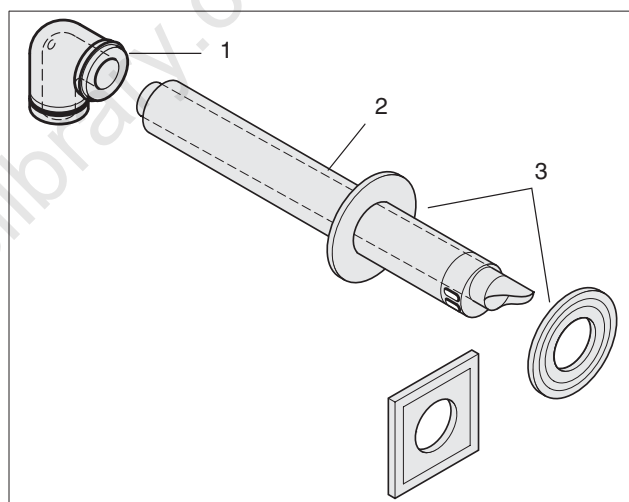


fig. 27 Standard horizontal flue pack

Standard horizontal flue pack (fig. 27):

- **item 1:** Flue turret 100/150;
- **item 2:** Horizontal flue terminal 100/150;
- **item 3:** Flue finishing kit.

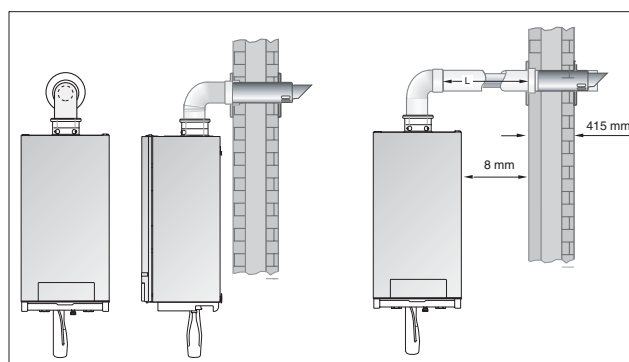


fig. 28 Side flue and rear flue installation

Standard vertical flue pack (fig. 29):

- Concentric vertical flue pipe 100/150.
- Wall clamp

7.3.3 Maximum Flue length (L)

The maximum pipe length (L) of the air supply and flue gas exhaust pipes for the condensing gas system boilers is determined by the total pressure loss of all components in the flue system.

Maximum length of horizontal or vertical extensions for 100/150 flue system $L = 29$ m (see fig. 30 and fig. 31).

Take the flue pipe clearances into account when planning the layout of the place of installation (see subsection 7.3.1: "Siting the flue terminal" on page 29).

Maximum wall thickness without extensions is 415 mm. Maintain a minimum side clearance of 8 mm (see fig. 28).

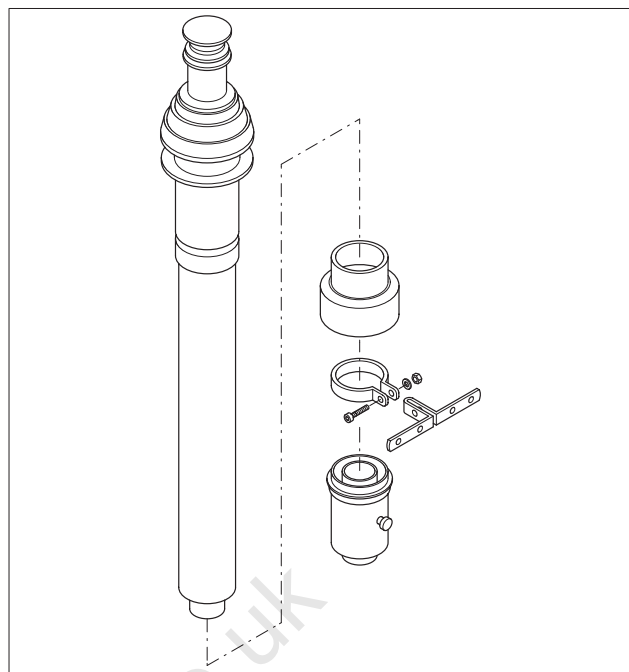


fig. 29 Standard vertical flue pack

Flow pressure available for use [Pa]	
Condensing gas boiler 80	195
Condensing gas boiler 100	220

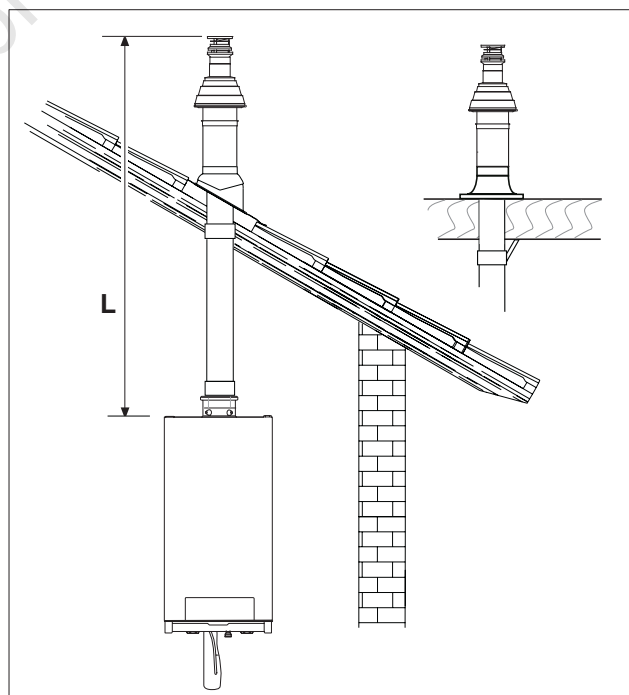


fig. 30 Vertical flue length

7.3.4 Additional flue parts

The additional flue parts listed can be ordered from your supplier.

Flue size 100/150:

100/150 flue system	For every bend or extension the max. flue length (L) has to be reduced by:
 500 mm extension	0.5 m
 1,000 mm extension	1.0 m
 90° bend	1.6 m
 45° bend	0.9 m



NOTE

The total reduction length must never exceed the maximum flue length.

Weathering slates for 100/150

Flat roof, pitched roof.

7.3.5 Standard 100 mm flue systems

The standard concentric flue system provides for a max. horizontal straight length of up to 29.0 m for 100/150 flue connection (see subsection 7.3.3).

Full instructions for fitting this flue are in subsection 7.3.6: "Installation of the horizontal flue" on page 33.



IMPORTANT

Any horizontal flue system fitted to a condensing boiler must be inclined towards the appliance at an angle of 30 mm per metre length to prevent condensate dripping from the flue terminal.

This means that the clearance above the appliance must be increased to match the duct length. See figure on page 16.

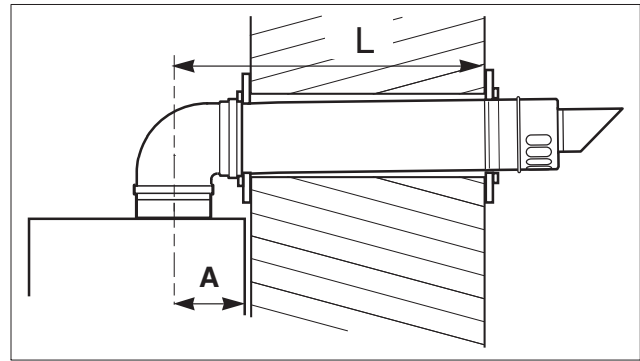


fig. 31 Horizontal flue length

7.3.6 Installation of the horizontal flue

The standard flue is suitable for lengths up to 660 mm (see fig. 32). For longer flue runs up to 29.0 m, flue extensions are available (accessory).

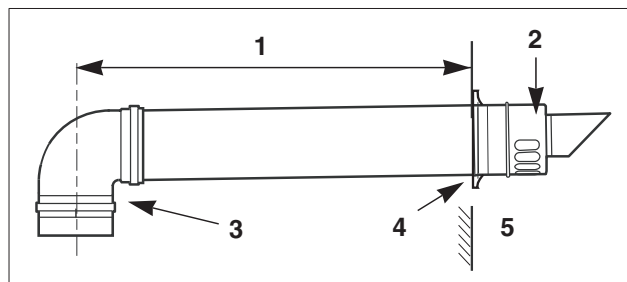


fig. 32 Installation with horizontal flue gas terminal

Item 1: maximum length

Item 2: terminal assembly

Item 3: 90° bend

Item 4: finishing kit

Item 5: outer wall

7.3.7 Flue pipe preparation and assembly

- Measure the flue length L. Refer to figures 33 and 34.



NOTE

The flue must be inclined from the boiler.

- Mark off the lengths shown onto the pipe and cut to length. The cuts must be square and free from burrs. Terminal assembly outer (air) pipe - L-70 mm, inner (flue) pipe - L-50 mm. The measurement is made from the ridge at the terminal indicating the outer face of the wall. Refer to figure 35. Extension outer flue - L-70 mm, inner flue - L-50 mm. The measurement is from the formed end.
- Assemble flue system completely. Push the flue fully together. The slope of the terminal outlet must face downwards (see fig. 35, item 1). The assembly will be made easier if a solvent free grease is lightly applied to the male end of the flue.



NOTE

An inner flue finishing kit is provided which should be fitted to the ducts before assembly.

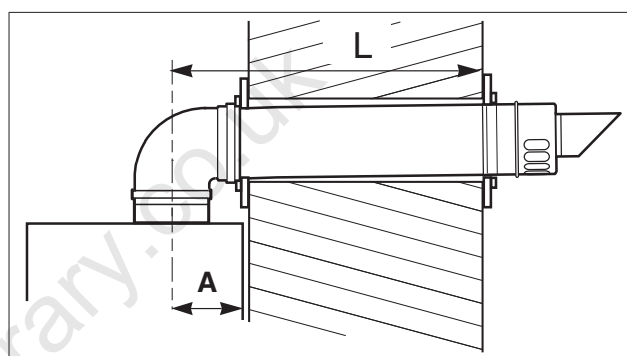


fig. 33 Flue length - rear

Item A = 150 mm without the use of a wall spacing frame

Item A = 185 mm with the use of a wall spacing frame

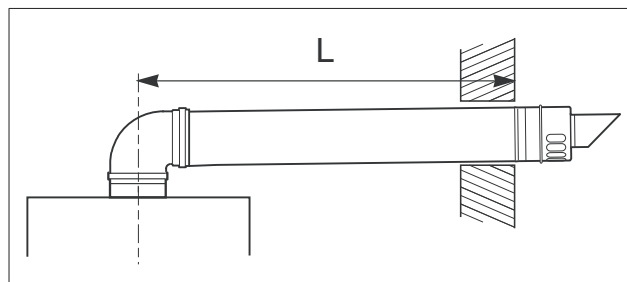


fig. 34 Flue length - side

- Push the assembly through the wall and slide the terminal onto the flue connector. Ensure that the terminal is fully entered into the socket on the boiler.
- From the outside fix the flue finishing kit to the terminal and, after ensuring the flue is properly inclined towards the boiler, fix the finishing kit to the wall. If the terminal is within 2 m of the ground where there is access then an approved terminal guard must be fitted. The guard must give a clearance of at least 50 mm around the terminal and be fixed with corrosion resistant screws.

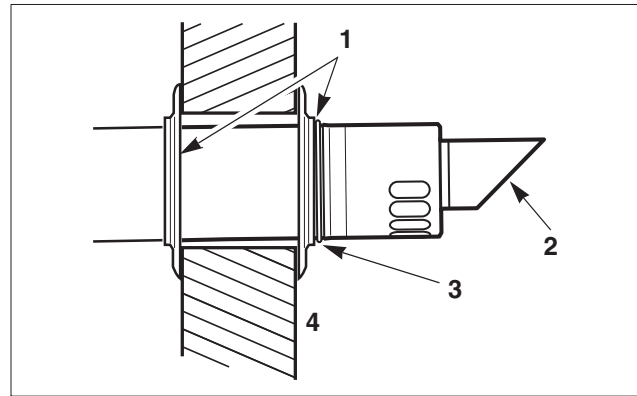


fig. 35 Flue terminal position

Item 1: flue finishing kit

Item 2: flue terminal

Item 3: raised ring locating the terminal relative to the outside wall face

Item 4: outer wall face

7.4 Flue gas connection

7.4.1 Open flue operation

If operation independent of room air is not desired or not possible due to local conditions, the boiler can be set up for operation to take air for combustion from the room (contact Buderus Technical).

The boiler is factory-fitted with a concentric connection.

An air intake strainer basket can be used for operation dependent on room air. This prevents falling dirt from entering the boiler (contact Buderus Technical ; accessory).

7.4.2 Room sealed operation

The boiler can be connected to a concentric flue gas system.

The boiler is factory-fitted with a concentric connection.

7.4.3 Flue material

When using plastic flue material, PPS is recommended.

7.4.4 Calculating the air intake and flue gas pipe dimensions

The minimum diameter of the air intake and flue gas pipes can be determined on the basis of the total resistance of all components in the air intake and flue system using the following method.

The maximum permissible pressure drop must then not be exceeded.

- Determine the length which has to be bridged by the air intake and flue gas pipe from the boiler to the roof terminal.
- Determine the provisional minimum diameter of the air intake and flue gas pipe for the length to be bridged according to table 6.
- Also take the maximum pressure drop $p_{w \max}$ (table 6) into consideration.

- Leave sufficient margin for any accessories that are to be used (bends, pipes, etc.).
- Determine the pressure loss of the total number of flue pipe length and for bends to determine the diameter.
- Determine the pressure loss of the total length in the flue gas pipe at the provisionally determined diameter.
- Determine the pressure loss of the total number of metres of the straight air intake pipe section at the determined diameter.



CAUTION!

CAUTION

If the flue gas system is intentionally dimensioned so that the total pressure loss is greater than p_w max (table 6), this will affect the boiler performance.

- Please contact Buderus Technical for additional information

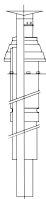
Pressure drops per component [Pa]	Ø [mm]	Logamax plus GB162-80 [Pa]	Logamax plus GB162-100 [Pa]
p _w max. [Pa]		195	220
Room air-dependent flue			
45° bend 	100	2.3	5.0
	110	1.2	2.9
90° bend 	100	8.2	18.5
	110	2.7	6.7
1 m. pipe 	100	1.9	4.2
	110	1.2	2.6
Concentric air intake / flue			
45° bend 	80/125	5.8	15.5
	100/150	4.5	8.6
90° bend 	80/125	12.1	32.8
	100/150	7.8	15.0
1 m. pipe 	80/125	6.4	17.2
	100/150	3.7	7.1
Roof terminal kit			
Roof terminal 	100/150	50.0	115.0

table 6 Pressure drops per component

7.5 Electrical connections

When connecting the electrical components, observe the wiring diagram, the installation and servicing instructions of the relevant product.



CAUTION!

DAMAGE TO THE INSTALLATION

due to short circuits.

To prevent electrical components from short-circuiting, only use:

- original cables and wiring supplied by the manufacturer.
- Single core cable.
- When using flexible cable, the ends must be fitted with ferrules.
Use cable of at least 0.75 mm².
- If the mains lead has to be replaced, you may only use an original manufacturer-supplied mains lead.



WARNING!

DANGER OF FATAL ACCIDENT

due to electric current when the boiler is open.

- Before opening the boiler:
Isolate the mains supply and remove the flue.
- Secure the heating system so that it cannot be switched on again unexpectedly, pulling the mains plug from the wall socket.

7.5.2 Terminal strip connections

- Turn the vent key through a quarter rotation to undo the boiler door lock (fig. 37, **see detailed picture**).
- Push the fastener down (fig. 37) and open the boiler door.

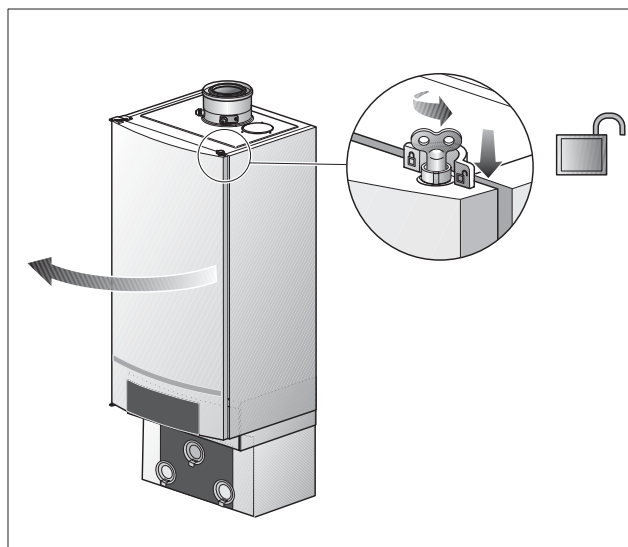


fig. 37 Open the boiler door

- Undo 1 screw to release the cover over the electrical connections and pull the cover upwards (fig. 38).

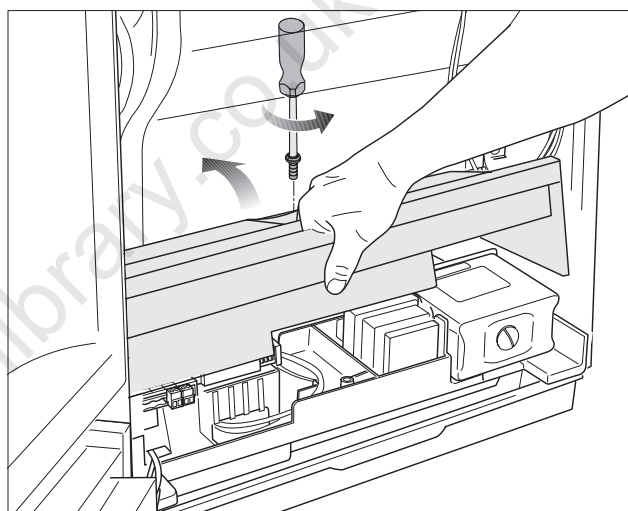


fig. 38 Pull up the cover over the electrical connections

The terminal strip in the boiler (fig. 39) has a number of terminals to connect internal and external electrical components. The listing below shows which components must be connected to which terminals (see section 7.5.4, page 39).

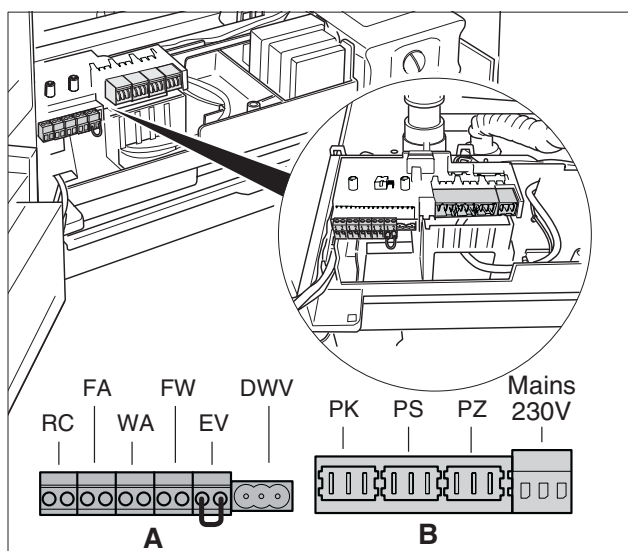


fig. 39 Terminal strip
A: Low-voltage connections
B: 230-V connections

7.5.3 Routing the cable through the boiler

- Route the cable for the low-voltage connections through the hole on the left (fig. 40, **item 1**).
- Route the cable for the 230-V connections through the hole on the right (fig. 40, **item 2**).
- Attach the cable for the 230-V connections using the strain relief clamps (fig. 40, **item 3**).

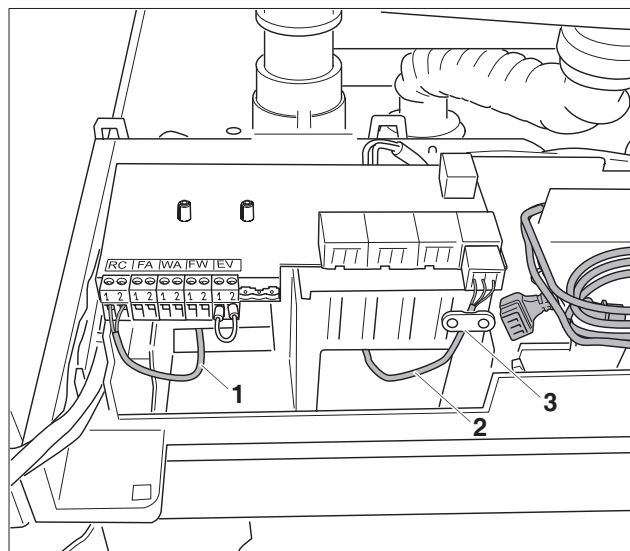


fig. 40 Routing the cable

7.5.4 Description of the terminal strip connections

Connect all components to the relevant terminals.



WARNING!

DANGER OF FATAL ACCIDENT

due to electric shock.

Items 1 – 6 (fig. 41) are low-voltage connections and items 7 – 10 (fig. 41) are 230 V-connections.

Please be aware that there may be a voltage on items 7 – 10 (230 V), when power is supplied to the boiler.

General control connection

The following controls can be connected to the boiler.

- Control with contact for potential free heat demand
- Logamatic RC20, RC30 room controller
- Logamatic 4121, 4122 cascade controller
- Error reporting module EM10, 0 – 10 V input (can be used to convert a 0 – 10 V signal to a modulating signal).

Connecting and installing a modulating control (room controller)



NOTE

- It is not possible to connect more than one room controller (fig. 42).

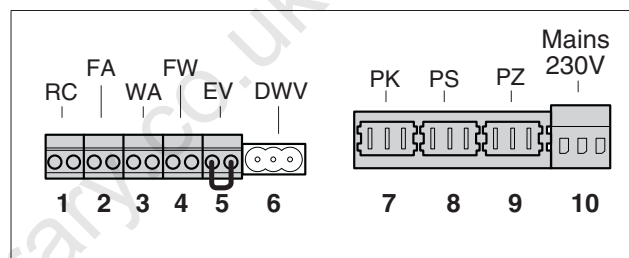


fig. 41 Terminal strip connections

- Item 1:** Room controller RC and EMS bus (connection colour orange)
- Item 2:** Outdoor-temperature sensor (connection colour blue)
- Item 3:** Connection terminal for potential free heat demand (connection colour green)
- Item 4:** DHW temperature sensor (connection colour grey)
- Item 5:** External switch contact, potential free, e. g. for floor heating (connection colour red) (thermal protection)
- Item 6:** Connection for external three-way valve
- Item 7:** External heating pump 230 V (connection colour green) (for use with non Buderus pump group)
- Item 8:** DHW pump 230 V (connection colour grey)
- Item 9:** DHW Circulation pump 230 V (connection colour lilac)
- Item 10:** Mains connection 230 V AC (connection colour white)

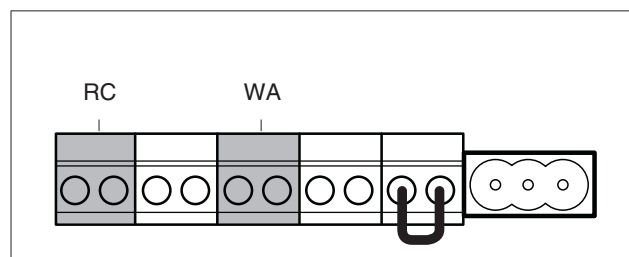


fig. 42 Terminal strip – RC room controller and potential-free heat demand

Installing an RC30 room controller as an outdoor temperature-dependant control in the boiler

For outdoor temperature-dependant control operation only: it is possible to install the room controller (e.g. RC30) in the boiler. In this case, the controller does not have to be connected to the terminal strip afterwards. If you would like to use this room controller for room temperature-controlled operation, the room controller must be installed in a living room.

- Push the arrow on the control panel cover to open (fig. 43).

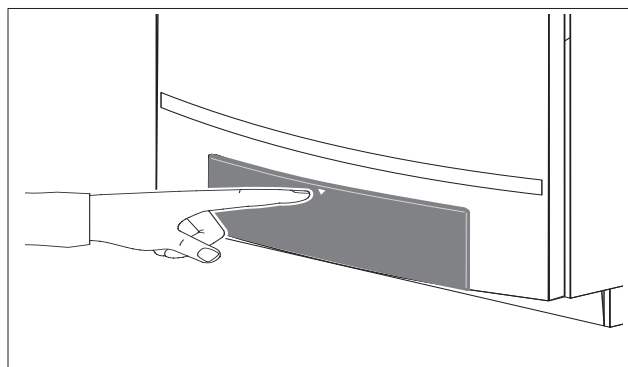


fig. 43 Opening the control panel

- Remove the cover (fig. 44, item 1).
- Install the RC30 in the slot (fig. 44, item 2).



NOTE

If you install the room controller (e.g. RC30) in the boiler, only outdoor temperature-controlled operation is possible. See the room controller user manual for further information.

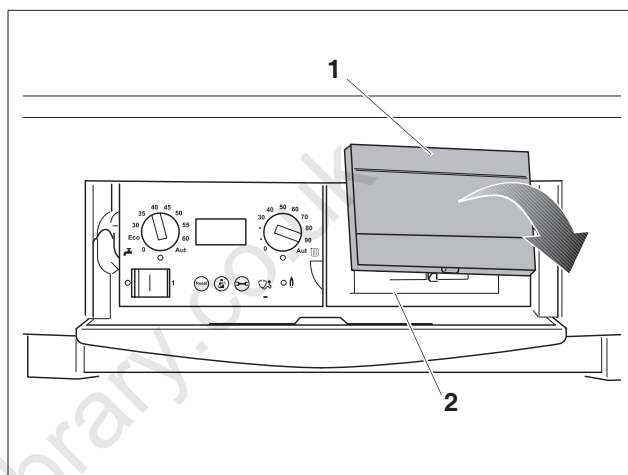


fig. 44 Remove the cover and install the room controller in the boiler (only for outdoor temperature-dependant operation).

Installing and connecting other controllers outside the boiler

- Install the controller as described in the relevant installation instructions.
- Connect a Logamatic RC20 or RC30 room controller or a Logamatic 4121 or 4122 cascade controller to the orange RC terminal (fig. 45) using a 2-core cable of 0.75 mm².



NOTE

This connection is reverse-proof. This means that it does not matter in which order the wires are connected.

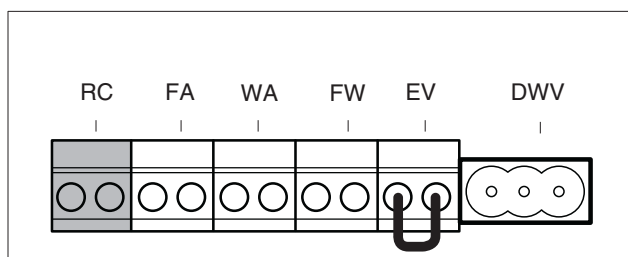


fig. 45 Terminal strip - Room controller RC and EMS bus (connection colour orange)

Connecting the outdoor temperature sensor

If outdoor temperature-dependant control operation is used, an outdoor temperature sensor must be connected.

- Connect the outdoor temperature sensor to the blue FA terminal (fig. 46), using a 2-core cable of 0.75 mm².

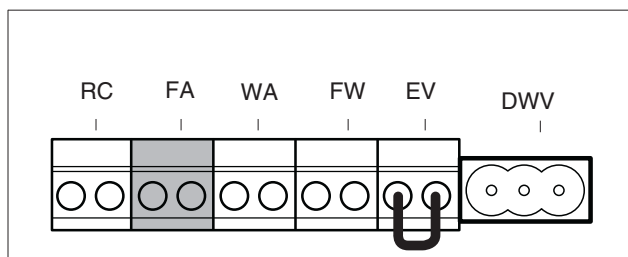


fig. 46 Terminal strip - Outdoor-temperature sensor (connection colour blue)

**NOTE**

This connection is reverse-proof. This means that it does not matter in which order the wires are connected.

Connecting the potential-free heat demand

- Connect the potential-free heat demand contact to the green WA terminal (fig. 47). The maximum allowed resistance of this circuit is 100 ohms. Use a 2-core cable of 0.75 mm².

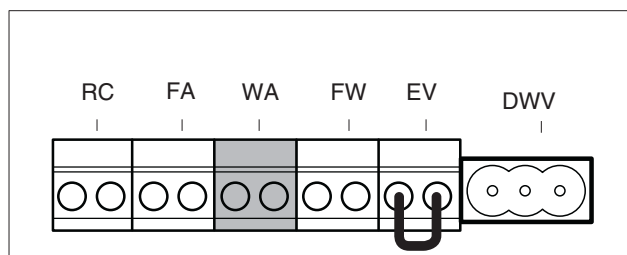


fig. 47 Terminal strip - potential-free heat demand (connection colour green)

**NOTE**

- It is not possible to connect a thermostat simultaneously to the RC connection and to the terminal for the potential-free heat demand (WA) (fig. 48).

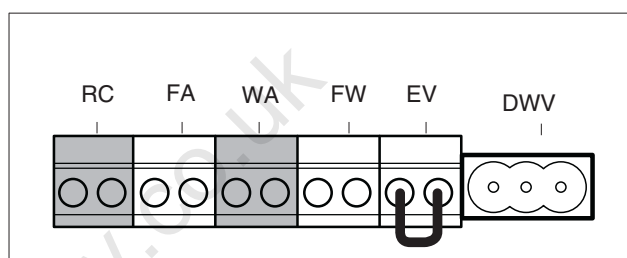


fig. 48 Terminal strip – RC room controller and potential-free heat demand

**NOTE**

It is possible to operate the boiler with an On/Off contact for potential-free heat demand, but the room temperature-based modulating function of the boiler cannot then be used anymore. This has a negative effect on comfort and energy consumption. If an On/Off contact for potential-free heat demand is installed, the boiler will only modulate up to the preset CH flow temperature.

**NOTE**

This connection is reverse-proof. This means that it does not matter in which order the wires are connected.

Connecting the DHW temperature sensor

- Connect the DHW temperature sensor to the grey FW terminal (fig. 49), using the harness enclosed with the DHW temperature sensor (fig. 49, **item 1**).

**NOTE**

This connection is reverse-proof. This means that it does not matter in which order the wires are connected.

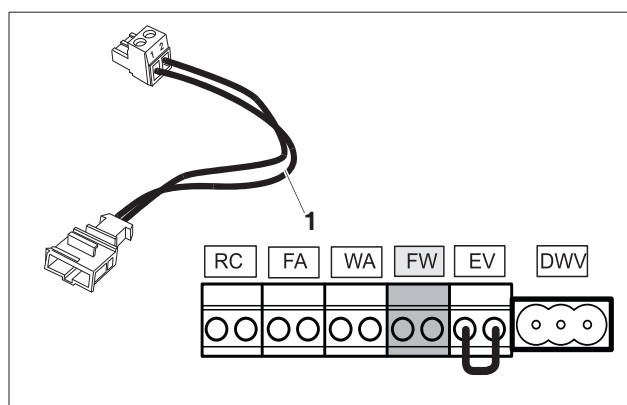


fig. 49 Terminal strip - DHW temperature sensor (connection colour grey)

**NOTE**

It is not possible to connect more than one DHW temperature sensor in the boiler.

It is only possible to connect the DHW temperature sensor suitable for that boiler to a particular boiler.

Connecting an external switch contact

A potential-free external switch contact can be connected. This external switch contact can be used to safeguard a underfloor heating system so that the heating water temperature will not become too high etc. When the external switch contact is opened, the boiler will be switched off for heating operation and for domestic hot water operation.

The pump continues to run for the run-over time set on the boiler.

- Remove the cable from the EV terminal (fig. 50).
- Connect the external switch contact to the red EV terminal (fig. 50).

**NOTE**

This connection is reverse-proof. This means that it does not matter in which order the wires are connected.

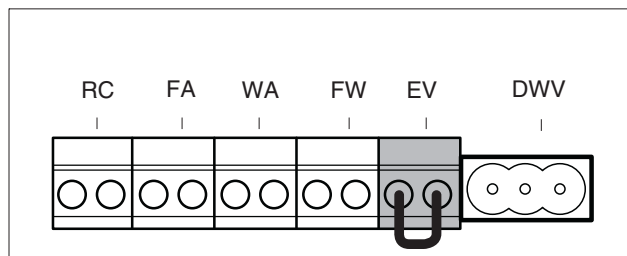


fig. 50 Terminal strip - external switch contact, potential-free, e. g. for floor heating (connection colour red)

7.5.5 230-V connections**NOTE**

The 230V connections can only be used with a corresponding control unit. If you use other than the Buderus pump group, you must ensure that it correctly connects to the terminal strip in fig. 51.

- Observe the layout document and the installation instructions of the control unit.

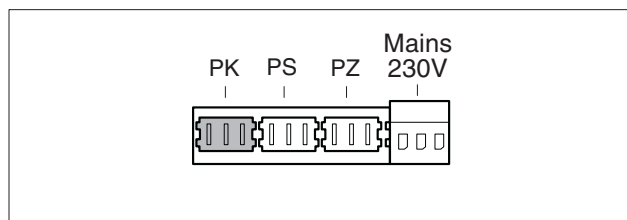


fig. 51 Terminal strip - external heating pump 230 V (connection colour green)



CAUTION!

WARNING!

Do not connect a temperature controller to the 230V connections.

Connecting an external boiler pump - general

Since the internal boiler has not been fitted with a pump, a pump must be connected to the boiler.

When using a pump group with an integrated pump:

- Read the assembly instructions of the pump group for the electrical pump connections.

If you do not make use of a pump group, you can connect the external pump in two ways:

- to the free 230 VAC connection cable;
- to the terminal strip of the boiler (green).

Proceed as follows:



CAUTION!

DAMAGE TO THE INSTALLATION

by the boiler being overloaded.

The maximum electrical load that can be connected to the free 230 VAC connection cable of the pump (fig. 52, **item 1**) and to the green EP connector (fig. 54) is 250 watts in total. If a load of more than 250 watts is to be connected, this is possible by using an additional 230/230V relay, which has to be installed by a registered installer/electrician.

Connection to the free 230 VAC connection lead

- Unwind the 230 VAC cable (fig. 52, **item 1**) and route it out of the boiler (fig. 53).

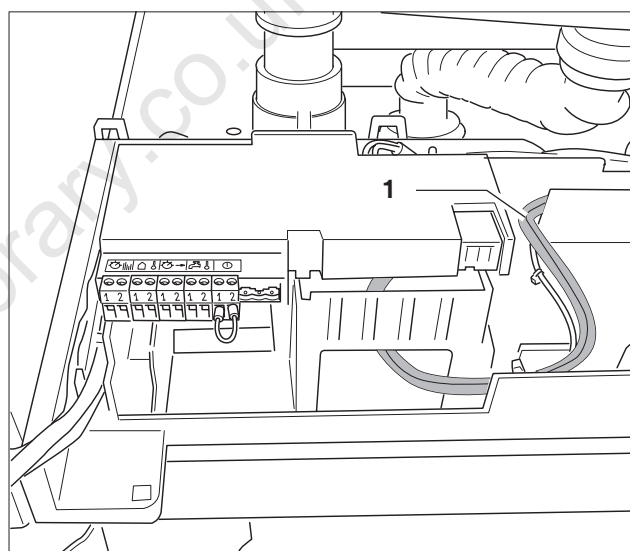


fig. 52 230 VAC cable of the pump

- Cut the plug from the 230 VAC cable.
- Connect the 230 VAC cable to the pump.

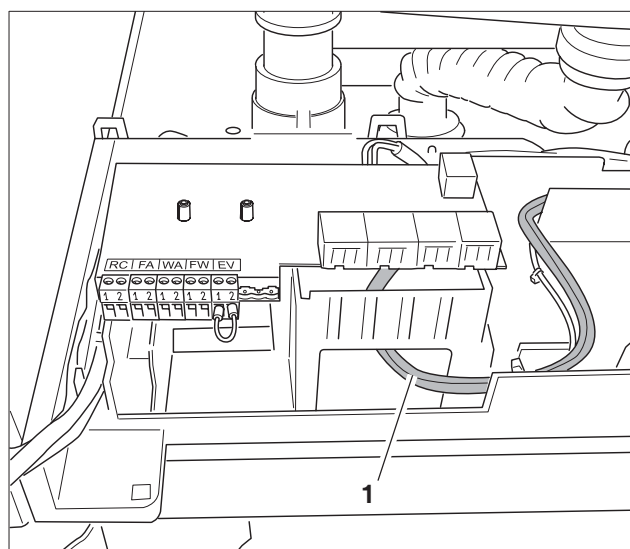


fig. 53 Route the 230 VAC pump cable

Connection to the terminal strip of the boiler

- Connect the external pump, if available, (not the pump of the pump group) to the green PK terminal (fig.54).

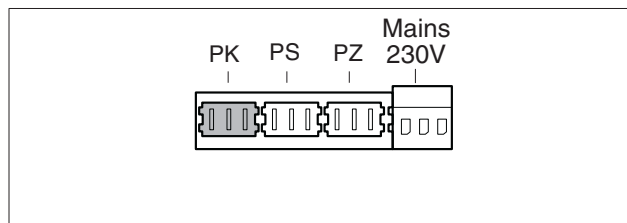


fig. 54 Terminal strip - external heating pump 230 V (connection colour green)

Connecting the DHW pump

- Connect the DHW pump to the grey PS terminal (fig. 55). The maximum allowed connected load of the pump = 250 Watts.

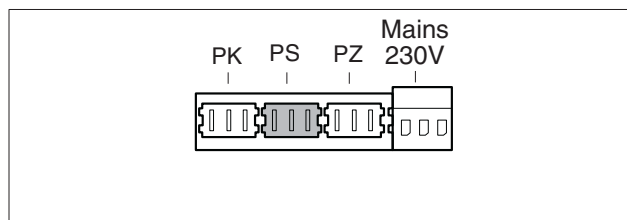


fig. 55 Terminal strip - DHW pump 230V (connection colour grey)

Connecting the DHW circulation pump

- Connect the DHW circulation pump to the lilac PZ terminal (fig. 56). The maximum allowed connected load of the pump = 250 Watts.

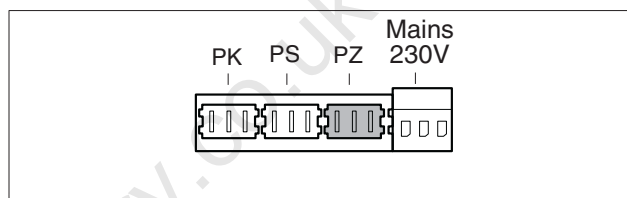


fig. 56 Terminal strip - DHW circulation pump 230V (connection colour lilac)

Connecting to the mains



NOTE

All Buderus boilers require a permanent live.

A mains supply of 230 V - 50Hz is required.

External controls are suitable for volt free installation.

Wiring to the boiler MUST be in accordance with the current I.E.E. (BS.7671) Wiring Regulations and any local regulations.

Wiring should be a 3 core PVC insulated cable, not less than 0.75 mm² (24 x 0.2 mm), and to table 16 of **BS.6500**.

Connection must be made in a way that allows complete isolation of the electrical supply such as a double pole switch having 3 mm contact separation in both poles, or by a three pin connector, serving only the boiler and system controls. This boiler is equipped with a double pole switch, see fig. 57, **item 1**.

The means of isolation must be accessible to the user after installation.

The electrical connection to the mains supply should be readily accessible and adjacent to the boiler.

If the supply cord is damaged, it must be replaced by a registered Corgi installer to avoid a hazard and must be an original spare part.

The electrical supply for both the boiler and the system must be taken from the same fused spur outlet.

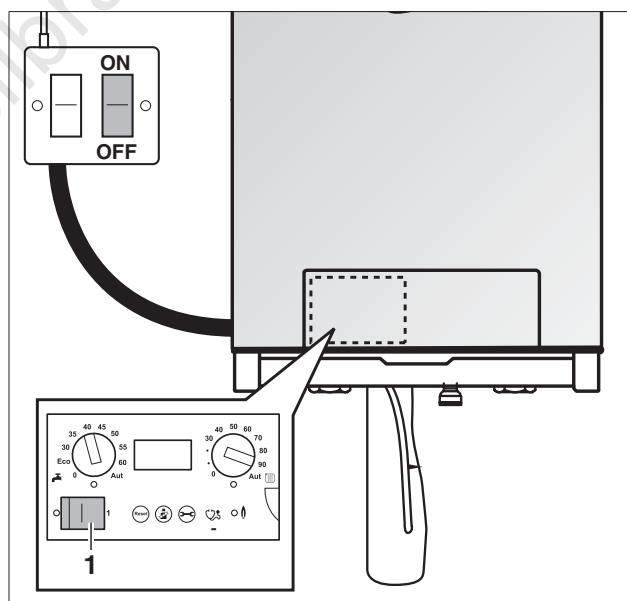


fig. 57 Mains supply



WARNING!

DANGER OF FATAL ACCIDENT

due to electric shock.

- Disconnect the boiler from the mains power supply before working on the boiler.

7.5.6 Installing function modules (accessories)



NOTE

Refer to the installation instructions of the relevant function modules for information about installation and combination possibilities.

The following function modules (accessories) can be connected to the boiler:

- Heat demand 0-10V module EM10;
- Error reporting module EM10;
- Switch module WM10;
- Mixing module MM10.

Function modules (accessories) can be installed in two ways:

- in the boiler (max. 2)
- outside the boiler.

Both methods are described below.

- Determine how the modules have to be installed.

Installing and connecting function modules (accessories) in the boiler

- Loosen the screw (fig 58, step 1).
- Pull open the draw (fig 58, step 2).

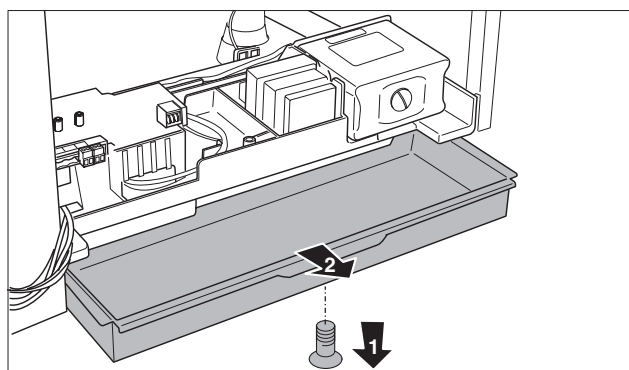


fig. 58 Opening the draw

- Install the wall bracket (accessory with function module) in the relevant slots in the draw (fig. 59).

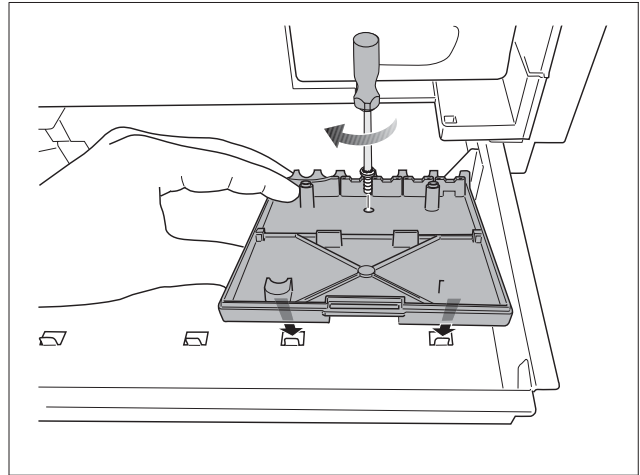


fig. 59 Installing the wall bracket

- Click the function module(s) into place in the wall bracket (fig. 60).
- Remove the draw.

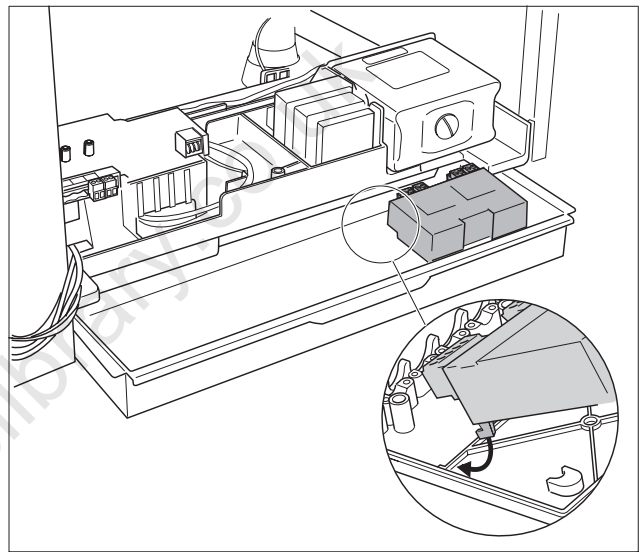


fig. 60 Clicking the function module into place in the wall bracket

- Remove the covers of both free connectors on the function module connection cables (fig. 61).
- Slide the draw back into the boiler.

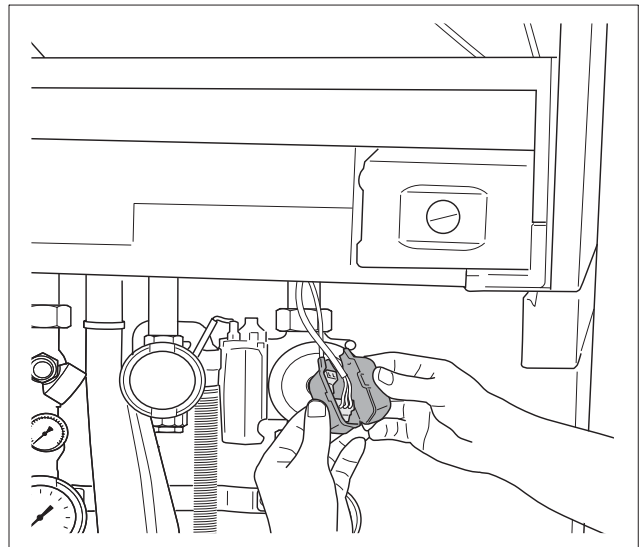


fig. 61 Removing the covers

- Connect the free 230VAC mains cable (fig. 61) to the module (fig. 62, **item 1**). If more modules are used, the 230 VAC supply for the second module can be taken from the first module using the cable enclosed with the module.

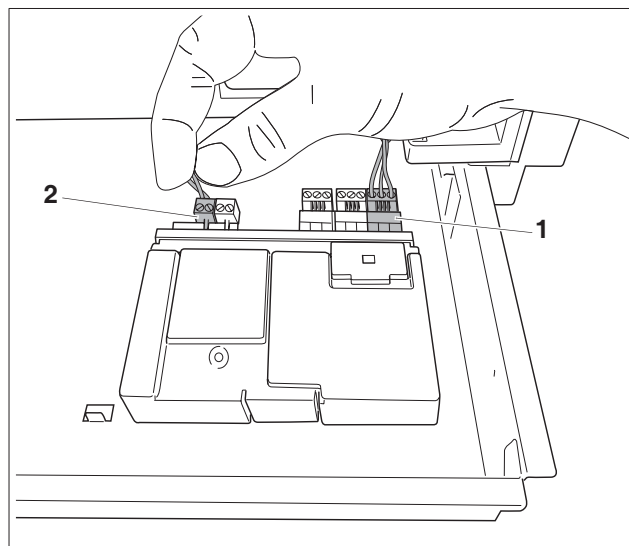


fig. 62 Interconnecting modules

- Connect the 230 VAC mains cable of the first module to the next module (fig. 63).

**NOTE**

The module may have the letters RC or EMS above the connection (fig. 63, item 1).

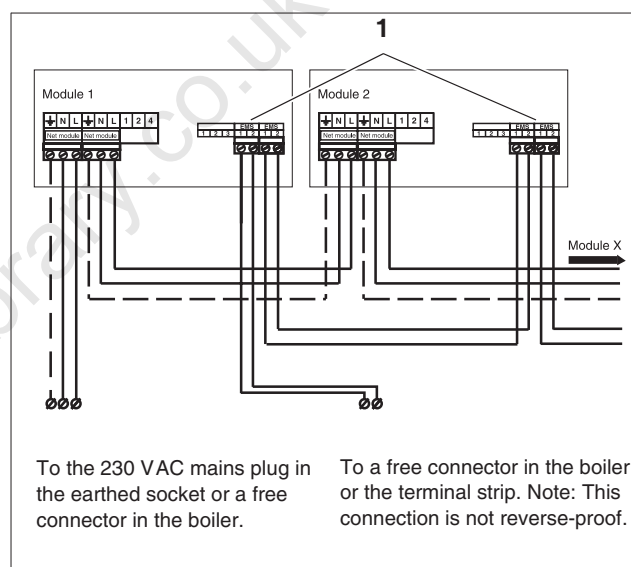


fig. 63 Connecting several modules

- Connect the free connector of the EMS bus connecting cable (fig. 62) to the first module (fig. 62, **item 2**).
- If more modules are used, the EMS bus connection for the second module may be branched off from the first module using the cable enclosed with the module (fig. 63 and 64).

**NOTE**

Pay attention to the polarity when using an EMS bus connection cable.

- Connect the wire from terminal 1 to terminal 1 and from terminal 2 to terminal 2 (fig. 63 and 64).

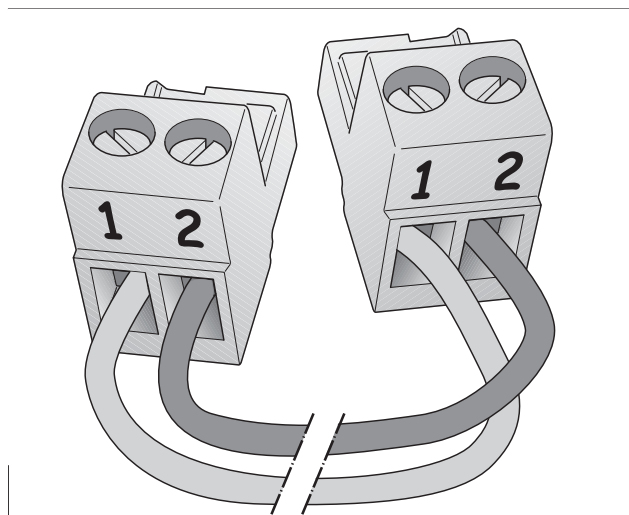


fig. 64 EMS bus polarity

Installing and connecting function modules outside the boiler

- Install the module on the wall.
- Make a sufficiently long EMS bus connection cable, using a 2-core cable of 0.4 - 0.75 mm² and the connector enclosed with the module (fig. 64).

Important: Use the connector of the same colour as the connections on the module.



NOTE

Pay attention to the polarity when using an EMS bus connection cable.

- Connect the wire from terminal 1 to terminal 1 and from terminal 2 to terminal 2 (fig. 64 and 66).
- Connect the EMS bus connection cable to the orange connection of the terminal strip (fig. 65, item 1).

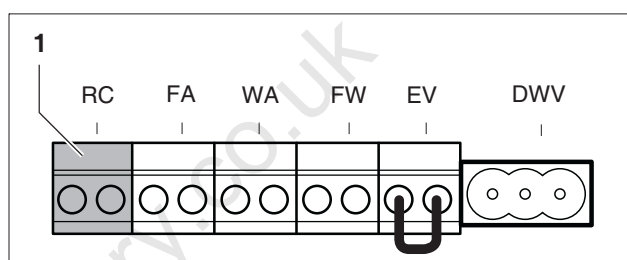


fig. 65 Terminal strip - Room controller RC and EMS bus (connection colour orange)

- Connect the other end of the EMS bus connection cable to the first module (fig. 66).



NOTE

The module may have the letters RC or EMS above the connection (fig. 66, item 1).

- If more modules are used, the EMS bus connection for the second module may be branched off from the first module using the cable enclosed with the module.
- Connect the EMS bus connection lead of the first module to the next module (fig. 66).
- Make a sufficiently long 230 VAC mains cable, using a 3-core cable of at least 0.75 mm² with an earthing wire, the connector enclosed with the module and a 230 VAC earthed plug.
- Connect the 230 VAC mains cable to the module (fig. 66). If more modules are used, the 230 VAC supply to the next module can be branched off from the previous module using the connector enclosed with the module and a three-core 0.75-mm² current cable with an earthing wire.
- Connect the 230 VAC supply cable of the previous module to the next module (fig. 66).

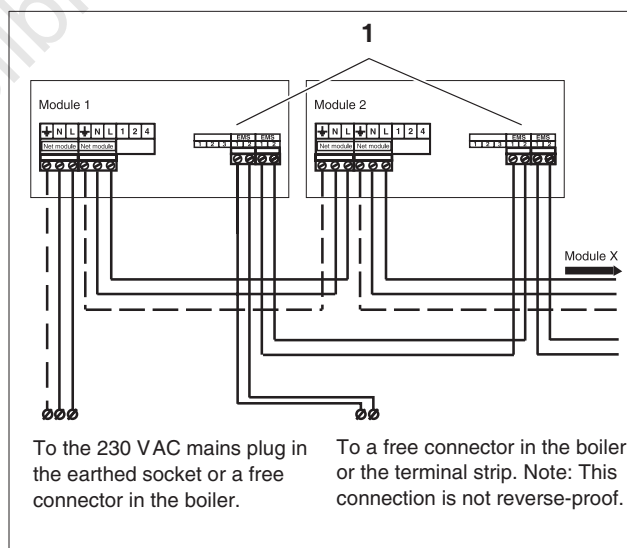


fig. 66 Connecting several modules

8 Operation

8.1 General items

The boiler is fitted with a control unit, the BC10 basic controller. This controller can be used to control the heating system.

- Push on the control panel to open it (fig. 67).

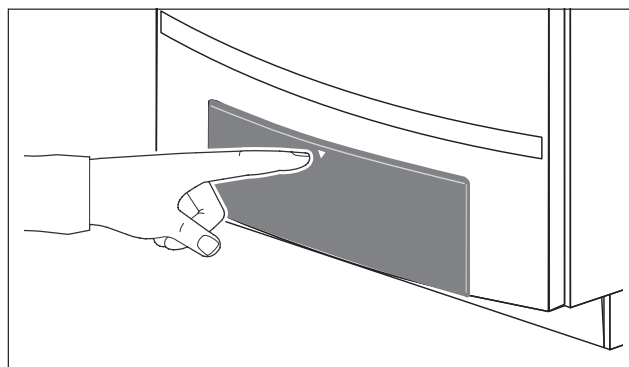


fig. 67 Opening the control panel

The BC10 basic controller is located on the left, behind the door (fig. 68, **item 2**).

The User Manual for the boiler is located in a compartment on the rear side of the door (fig. 68, **item 1**).

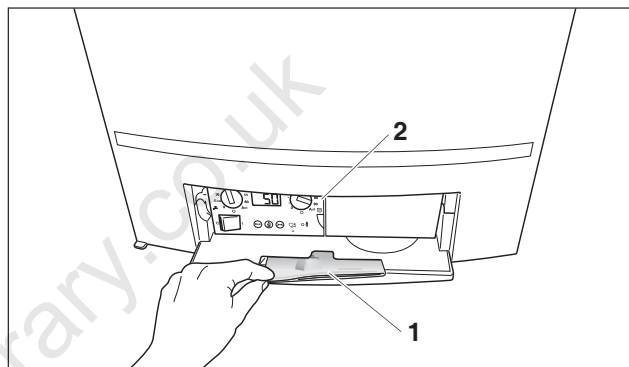


fig. 68 BC10 and User Manual

The BC10 basic controller consists of the following components:

Mains switch

The mains switch (fig. 69, **item 1**) is used to switch the boiler on and off.

"Reset" button

If a fault has occurred you may have to restart the boiler by pressing the "Reset" button (fig. 69, **item 2**).

This is only required in the event of a "locking" fault.

"Blocking" faults are reset automatically as soon as their cause has been corrected. The display shows  during the reset operation.



NOTE

If the boiler stops due to a fault again after resetting the fault, the fault can be remedied using the Service instructions. Contact Buderus if necessary. See the back of this document for contact details.

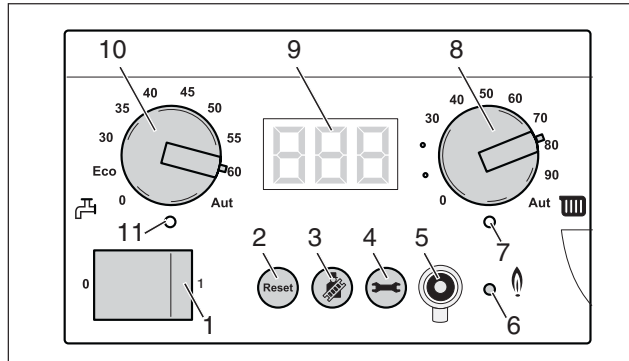


fig. 69 BC10 basic controller

Item 1: Mains switch

Item 2: "Reset" button

Item 3: "Chimney sweep" button

Item 4: "Service" button

Item 5: Service Connector

Item 6: "Burner" LED (On/Off)

Item 7: "Heat demand" LED

Item 8: Maximum CH flow temperature dial

Item 9: Display

Item 10: DHW temperature dial

Item 11: "DHW mode" LED

"Chimney sweep" button

The "Chimney sweep" button (fig. 69, **item 3**) is used to put the boiler into flue gas test, service or manual operation mode.

The flue gas test enables the boiler to be run in full-load operation manually for a short period. See table 9, "Flue gas test", page 52.

The service mode enables the boiler to be run in part-load operation manually for a short period.

Measurements and settings are carried out on the boiler during service mode. See table 10, "Service mode", page 53.

Manual operation mode enables the boiler to be operated manually for a long period. The boiler is switched to manual mode when the control system has not been installed yet or is out of order. See table 11, "Manual operation", page 54.

A maximum heating water temperature in accordance with the setting of the "Maximum heating water temperature" dial (fig. 69, **item 8**) on the BC 10 basic controller applies during chimney sweep, service and manual operation.



CAUTION!

DAMAGE TO THE INSTALLATION

with underfloor heating: by the floor being overheated.

- Limit the maximum CH flow temperature using the "Maximum CH flow temperature" dial (fig. 69, **item 8**) to the maximum flow temperature of the floor heating circuit (usually maximum 40 °C).



CAUTION!

DAMAGE TO THE INSTALLATION

due to frost while manual operation is switched on. After a power failure or after switching off the supply voltage, the heating system may freeze since manual operation is no longer active then.

- Start manual operation after switching on the heating system, so that the system is permanently in operation (especially if there is a risk of freezing).

"Service" button

The "Service" button (fig. 69, **item 4**) is used to display the current CH flow temperature, the current system pressure etc. Also see table 18, „BC10 Display readings“, page 93“, table 19, „BC10 Display settings“, page 93 and table 20, „BC10 Display codes“, page 94.

Service Tool connection

For effective and quicker fault finding, analysis and correction, the Service Tool (fig. 70) can be connected to the boiler via the service connector (fig. 71, **item 5**).

- Push the control panel to open it and remove the service connector cover (see fig. 67, page 49 and fig. 71, **item 5**).
- Connect the Service Tool to the service connector.

For further information please contact buderus.

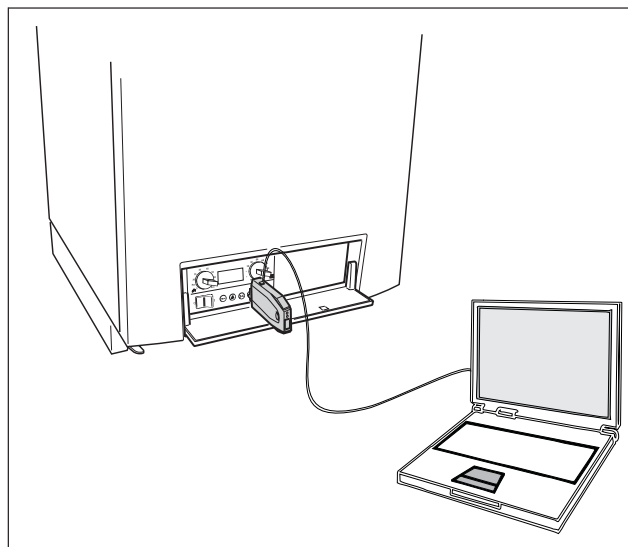


fig. 70 Service tool connected to the boiler

"Burner" (On/Off) LED

The "Burner" (On/Off) LED (fig. 71, **item 6**) lights up when the burner of the boiler is active and it is extinguished when the burner is switched off.

The "Burner" (On/Off) LED indicates the burner status.

LED	Status	Explanation
On	Burner operational	Boiler water is being heated.
Off	Burner off	The CH flow temperature has reached the target value and there is no heat demand.

table 7 Meanings of "Burner" (On/Off) LED indications

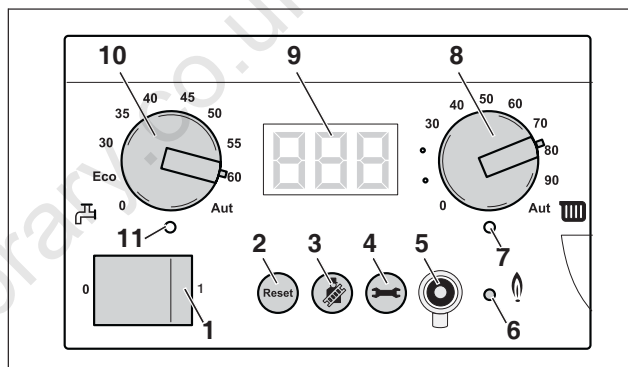


fig. 71 BC10 basic controller

"Heat demand" LED

The "Heat demand" LED (fig. 71, **item 7**) lights up when the control system has made a heat demand and it is extinguished when this heat demand is no longer required.

Maximum CH flow temperature dial

The maximum CH flow temperature dial (fig. 71, **item 8**) is used to set the upper CH flow temperature limit. The unit is °C.

Display

The heating system display values, display settings and display codes can be read out from the display (fig. 71, **item 9**).

If a fault occurs the display will immediately show the accompanying fault code. The fault code display will flash if a locking fault has occurred.

DHW temperature dial

The DHW temperature dial (fig. 71, **item 10**) is used to select the required temperature of the hot water in the hot water cylinder. The unit is °C. See table 17, page 72.

"DHW mode" LED

The "DHW mode" LED (fig. 72, **item 11**) lights up when a DHW request has occurred and it is extinguished when this DHW demand is no longer required.

8.2 BC10 control operating instructions

You can navigate through the menu structure of the boiler on the BC10 using the "Reset" button, the "Chimney sweep" button, the "Service button" (fig. 72, **items 2, 3 and 4**) and the display (fig. 72, **item 9**) using table 8 to table 12.

The menu structure consists of 5 menus:

- Normal Operation menu
- Flue Gas Test menu
- Service Mode menu
- Manual Operation menu
- Settings menu

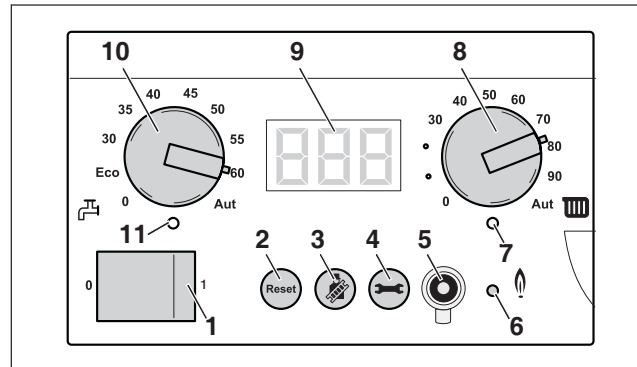


fig. 72 BC10 basic controller

Normal Operation menu			
Step 1	24 Display value. Currently measured CH flow temperature in °C. Also see section 13.2.		
Step 2	Continue in Normal Operation menu?	Yes: → step 3 No: → step 1	
Step 3	Press the button.		
Step 4	P 1.6 Display value. Currently measured system pressure in bar. Also see section 13.2.		
Step 5	Press the button.		
Step 6	- H Random display code. In this case: Operating phase: Boiler in heating mode. Also see section 13.4.		
Step 7	Have at least 5 seconds passed without a button being pressed and/or has the mains voltage been interrupted ?	Yes: → step 1 No: → step 8	
Step 8	Press the button.		→ step 1

table 8 Normal operation

Flue Gas Test menu			
Step 1	24 Display value. Currently measured CH flow temperature in °C. Also see section 13.2.		
Step 2	Activate flue gas test?	Yes: → step 3 No: → step 1	
Step 3	To activate the flue gas test: Press and hold the button for more than 2 but not longer than 5 seconds.		
Step 4	24 Display value. As soon as a non-flashing dot is shown in the right-hand bottom corner of the display, the flue gas test has been activated. This means that the boiler is in heating mode at a capacity of 100 % for a maximum of 30 minutes. The maximum CH flow temperature as set on the maximum CH flow temperature dial of the BC10 basic controller now applies. DHW mode is possible during manual operation.		
Step 5	Press the button.		
Step 6	P 1.6 Display value. Currently measured system pressure in bar. Also see section 13.2.		

table 9 Flue gas test

Flue Gas Test menu			
Step 7	Press the  button.		
Step 8	 Display code: Operating phase: The boiler is in flue gas test mode. Also see section 13.4.		
Step 9	Press the  button.		
Step 10	 Display value. Currently measured CH flow temperature in °C. Also see section 13.2.		
Step 11	Have 30 minutes passed or has the mains voltage been interrupted?	Yes:	→ step 1
		No:	→ step 12
Step 12	Deactivate flue gas test?	Yes:	→ step 13
		No:	→ step 5
Step 13	To deactivate the flue gas test: Press and hold the  button for more than 2 seconds until the dot disappears.		→ step 1

table 9 Flue gas test

Service Mode menu			
Step 1	 Display value. Currently measured CH flow temperature in °C. Also see section 13.2.		
Step 2	Activate service mode?	Yes:	→ step 3
		No:	→ step 1
Step 3	To activate service mode 1st step: Press and hold the  button for more than 2 but not longer than 5 seconds.		
Step 4	 Display value. As soon as a non -flashing dot is shown in the right-hand bottom corner of the display, the boiler is in heating mode at a capacity of 100 % for a maximum of 30 minutes. The maximum CH flow temperature as set on the maximum CH flow temperature dial of the BC10 basic controller (control panel) now applies. DHW mode is not possible during service mode operation.		
Step 5	To activate service mode 2nd step: Simultaneously press and hold the  +  buttons for more than 2 seconds.		
Step 6	 Display setting Maximum capacity setting during heating mode in %. Also see section 13.3. In this case:  = 100 %. Service mode has been activated. You can now temporarily lower the boiler performance to partial load to check and if relevant set the gas/air ratio or the ionisation current.		
Step 7	Press and hold the  button until the display shows  with a 80-kW boiler or  with a 100-kW boiler.		
Step 8	 Display setting: with a 80-kW boiler and  with a 100-kW boiler. Minimum capacity setting during heating mode in %. Also see section 13.3. The boiler will reduce its performance to 25 % or 20 % respectively within a couple of seconds. The maximum CH flow temperature set on the BC10 basic controller (control panel) applies now. Check the gas/air ratio or the ionisation current and if necessary set the gas/air ratio according to section 9.2.7 or section 9.2.11.		
Step 9	Press the  button.		
Step 10	 Display setting: This parameter shows the pump run-over time in minutes when heating mode has been ended. Also see section 13.3.		
Step 11	Press the  button.		
Step 12	 Display setting: This parameter indicates the DHW mode status setting. Also see section 13.3.		
Step 13	Press the  button.		
Step 14	 Display value. Currently measured CH flow temperature in °C. Also see section 13.2.		
Step 15	Press the  button.		

table 10 Service mode

Service Mode menu			
Step 16	Display value. Currently measured system pressure in bar. Also see section 13.2.		
Step 17	Press the button.		
Step 18	Display code: Operating phase: The boiler is in service mode. Also see section 13.4.		
Step 19	Press the button.		
Step 20	Display value. Currently measured CH flow temperature in °C. Also see section 13.2.		
Step 21	Have 30 minutes passed or has the mains voltage been interrupted?	Yes:	→ step 22
		No:	→ step 23
Step 22	Service mode is deactivated.		→ step 25
Step 23	Deactivate service mode?	Yes:	→ step 24
		No:	→ step 15
Step 24	To deactivate the service mode: Press and hold the button for more than 2 seconds until the dot disappears.		
Step 25	The boiler capacity drops to the preset capacity, see the "Settings" menu (table 12).		→ step 1

table 10 Service mode

Manual Operation menu			
Step 1	Display value. Currently measured CH flow temperature in °C. Also see section 13.2.		
Step 2	Activate manual operation?	Yes:	→ step 3
		No:	→ step 1
Step 3	To activate manual operation: Press and hold the button for more than 5 seconds.		
Step 4	Display code: Operating phase: As soon as a flashing dot is shown in the right-hand bottom corner of the display, manual operation is active. This means that the boiler is permanently in heating mode. The maximum CH flow temperature as set on the maximum CH flow temperature dial of the BC10 basic controller (control panel) now applies. The "Heat request" LED lights up. DHW mode is possible during manual operation.		
Step 5	Press the button.		
Step 6	Display value. Currently measured system pressure in bar. Also see section 13.2.		
Step 7	Press the button.		
Step 8	Display code: Operating phase: Also see section 13.4. The boiler is in manual operation mode. This means that the boiler is in heating mode while there is no heat request from the controller. During manual operation the "Settings" menu (table 12 from step 3) can be used to temporarily change the target boiler performance. Note: If the boiler output has been changed temporarily, this must be set again after ending manual operation, according to the "Settings" menu (table 12).		
Step 9	Press the button.		
Step 10	Display value. Currently measured CH flow temperature in °C. Also see section 13.2.		
Step 11	Has there been a power failure?	Yes:	→ step 1
		No:	→ step 12
Step 12	Deactivate manual operation?	Yes:	→ step 13
		No:	→ step 5
Step 13	To deactivate manual operation: Press and hold the button for more than 2 seconds until the dot disappears.		→ step 1

table 11 Manual operation

Settings menu			
Step 1	24 Display value. Currently measured CH flow temperature in °C. Also see section 13.2.		
Step 2	Open the "Settings" menu?	Yes:	→ step 3
		No:	→ step 1
Step 3	To open the "Settings" menu: Press and hold the + buttons for more than 2 seconds.		
Step 4	-- Display setting. As soon as the display shows --, the "Settings" menu is open. You can set the boiler performance using the first parameter shown on the display. Also see section 13.3.		
Step 5	Adjust boiler performance?	No:	→ step 7
		Yes:	→ step 6
Step 6	Lower: Decrease the target boiler output with the button. The minimum setting is 25 = 25 % with an 80-kW boiler and 20 = 20 % with a 100-kW boiler. Higher: Increase the target boiler output with the button. The maximum setting is 100 = 100 %. This is equal to the factory setting.		
Step 7	Press the button.		
Step 8	5 Display setting. Set the second parameter as soon as the display shows 5. This parameter shows the target pump run-over time in minutes after heating operation has ended. Also see section 13.3. Note: Do not set a pump run-over time of less than 5 (= 5 minutes).		
Step 9	Set the pump run-over time after heating operation has ended?	Yes:	→ step 10
		No:	→ step 11
Step 10	Lower: Decrease the target pump run-over time after the end of heating operation with the button. The minimum setting is 0 = 0 minutes. The factory default setting is 5 minutes. CAUTION Do not set the target pump run-over time after the end of heating operation to less than 5 minutes. Higher: Increase the target pump run-over time after the end of heating operation with the button. The maximum setting is 60 = 60 minutes or 24 = 24 hours.		
Step 11	Press the button.		
Step 12	1 Display setting. Set the third parameter as soon as the display shows 1. This parameter indicates the DHW mode status setting. This enables DHW mode to be switched off or on. This setting has priority over other DHW mode settings, such as those made on the room thermostat. Also see section 13.3.		
Step 13	Set the DHW mode status?	Yes:	→ step 14
		No:	→ step 15
Step 14	Set the DHW mode target status with the or buttons. 1 means "On", 0 means "Off". Please note: Setting 0 also switches off the hot water cylinder frost protection.		
Step 15	Have at least 5 seconds passed without a button being pressed and/or has the mains voltage been interrupted ?	Yes:	→ step 17
		No:	→ step 16
Step 16	Press the button.		
Step 17	24 Display value. Any adjustments that you have made have been confirmed.		→ step 1

table 12 Settings

9 Commissioning



NOTE

If a fault occurs, then refer to the servicing manual or contact Buderus.

This section explains how to start up the boiler.

- Complete the commissioning record log book after carrying out the activities described below (see section 9.5 „Commissioning record log book“, page 75).

9.1 Filling the heating system

9.1.1 Filling the heating system



NOTE

At initial start up, the boiler will start up as soon as the system pressure exceeds 1.0 bar.

If the system pressure falls to below 0.2 bar the boiler will stop and generate a fault code.

The pre-pressure of the expansion vessel must be at least equal to the static pressure (system height to the centre of the expansion vessel), however never less than 0.5 bar.

- Push on the control panel to open it (fig. 73).

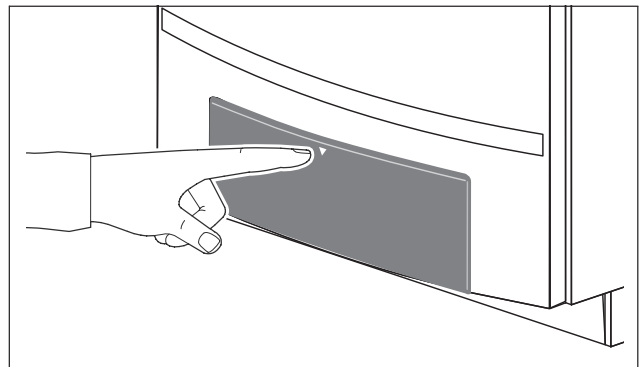


fig. 73 Opening the control panel

- Turn the maximum CH flow temperature dial (fig. 74, **item 8**) and DHW temperature dial (fig. 74, **item 10**) anticlockwise to the "0" position.

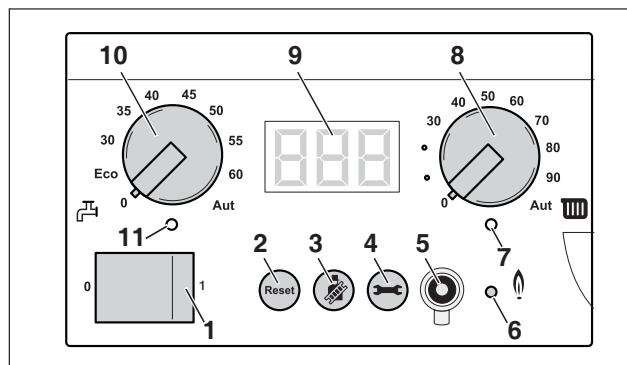


fig. 74 BC10

- Turn the vent key through a quarter rotation to undo the boiler door lock (fig. 75, **see detailed picture**).
- Push the fastener down (fig. 75) and open the boiler door.
- Remove the insulation cover of the pump group (fig. 75).

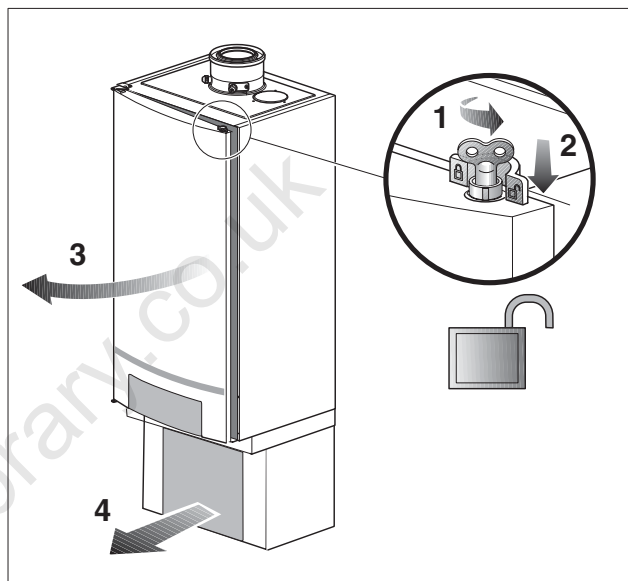


fig. 75 Opening the boiler door

The boiler has an automatic air vent (fig. 76) to purge the boiler.

To purge the boiler, every radiator in the heating system must have a purge facility. In some situations it may even be necessary to provide extra purging facilities at certain locations.

- Turn the cap of the automatic air vent (fig. 76) through one rotation to loosen it.

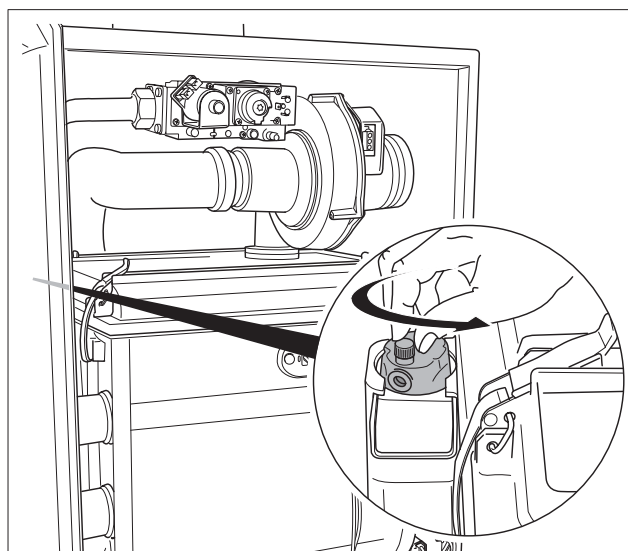


fig. 76 Opening the automatic air purging unit

Filling and refilling of the heating circuit must have been carried out by a method that has been approved by the Water Regulation Advisory Scheme (WRAS), for the type of heating appliances, i.e. Domestic (in-house) Fluid Category 3. Non-Domestic (other than in-house) Fluid Category 4. Depending on the Fluid Category the approved method should comprise of the following:

Requirements Fluid Category 3 systems (fig. 77)

- Control valve (stop valve) including a double check valve on the mains cold water supply pipe.
- Temporary connection to be removed after filling (filling loop).
- Control valve (stop valve) on the heating system pipework.

Requirements Fluid Category 4 systems (fig. 77)

- Control valve (stop valve) on the mains cold water supply pipe.
- Strainer.
- Water non return valve with reduced pressure Zone (RPZ valve assembly) incorporating a Type BA air gap.
- Tundish.
- Control valve (stop valve) on the heating system pipework.
- Open the heating flow and return isolating valves on the pump group (fig. 79) (open position: parallel to the pipe).

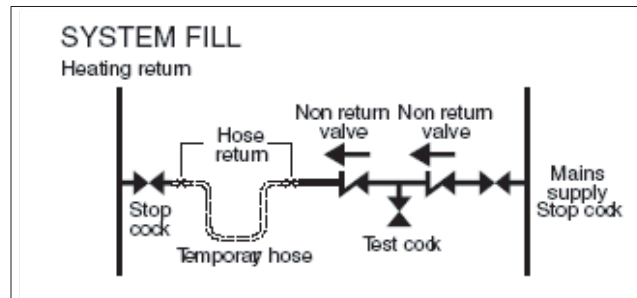


fig. 77 System fill - category 3

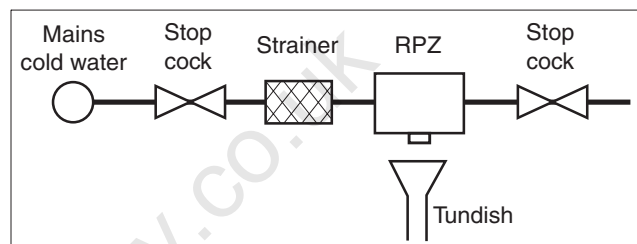


fig. 78 System fill - category 4

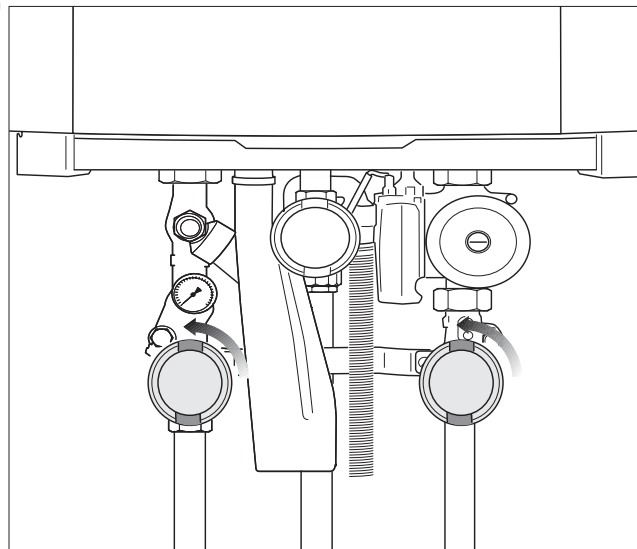


fig. 79 Opening the isolating valves (here: open position)

- Read the pressure from the pressure gauge on the pump group or on the control panel of the BC10 (fig. 80).

The pressure in the heating system, which is measured directly at the boiler, must be at least equal to the required pre-pressure of the expansion vessel plus 0.5 bar. This minimum pressure must not be less than 1.0 bar (if the heating system is cold). The maximum pressure in the heating system, measured directly at the boiler, must not exceed 3.5 bar.

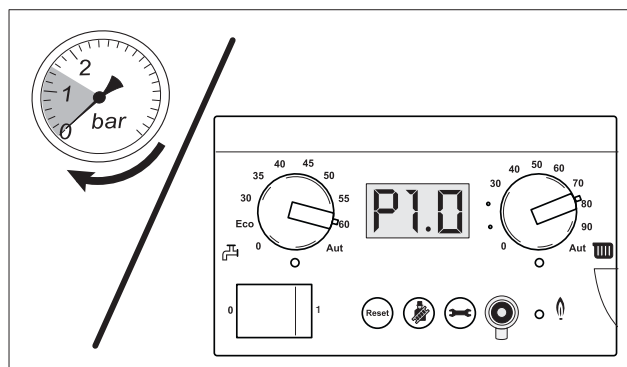


fig. 80 Reading the pressure gauge

- Purge the heating system via the air vents on the radiators. Start at the lowest floor of the premises and then work your way up from floor to floor (fig. 81).

If the boiler has been in use for approx. one week and the pressure reading on the display is less than 1.0 bar, the system has to be topped up.

The pressure loss in a heating system is caused by air bubbles escaping via fittings and (automatic) air vent units. The oxygen contained in the fresh heating water will also escape from the heating water after some time and cause the pressure in the heating system to drop. This explains why it is normal that the heating system must be topped up a couple of times after commissioning it. Eventually the system will have to be topped up on average once a year.

Should it be necessary to top up the heating system more frequently, water is probably escaping due to a leakage in the system or a defective expansion vessel. In this case the cause of the water loss must be repaired as soon as possible.

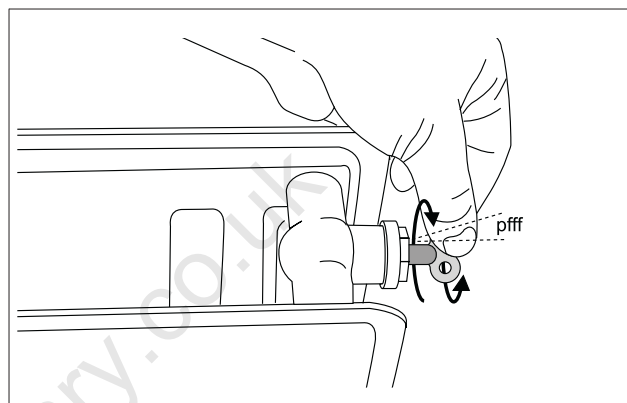


fig. 81 Purging the heating system

9.1.2 Filling the condensate trap with water

- Fill the condensate trap with water (fig. 82).

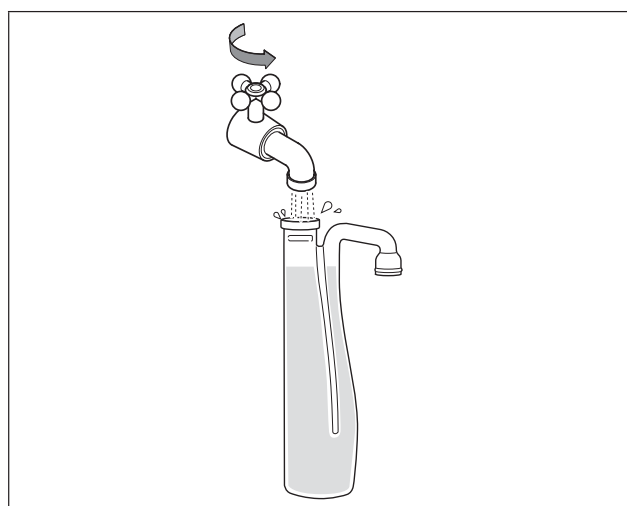


fig. 82 Filling the condensate trap with water

9.2 Testing and measuring

9.2.1 Checking for gas leaks

Prior to the initial start-up check that the gas supply pipework is gas-tight; this must be confirmed in the commissioning log book.



WARNING!

DANGER OF FATAL ACCIDENT

from explosive fumes.
Pipes and fittings may leak after commissioning and maintenance activities have been carried out.

- Carry out a correct leakage test.
- Only use approved leak detection spray to locate leaks.



CAUTION!

DAMAGE TO THE INSTALLATION

due to short circuits.

- Cover any hazardous locations prior to locating the leaks.
- Do not spray the leak detection product on cable runs, plugs or electrical wiring. Do not let it drip onto them either.

- Slowly open the gas valve by pushing on the gas valve and turning it ¼ rotation in an anticlockwise direction (fig. 83). The gas valve is open when it is in the vertical position.

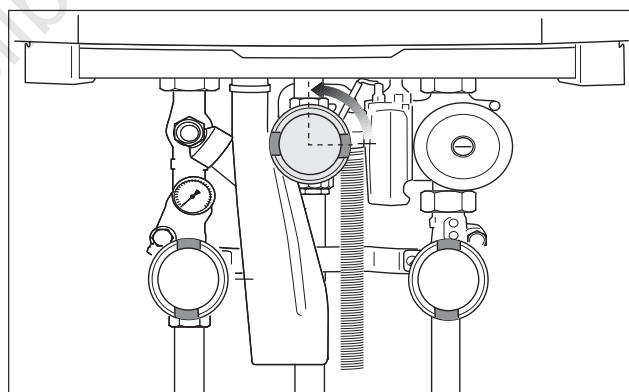


fig. 83 Open the gas valve

- Switch off the power supply to the heating system (fig. 84).
- Check the new pipe section up to and including its connection (i.e. direct sealing location) to the gas fitting for leaks, using a foaming product. The maximum test pressure allowed at the gas valve inlet is 150 mbar.

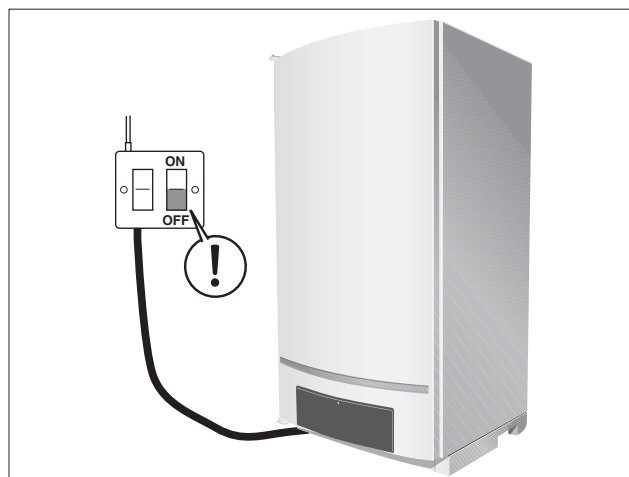


fig. 84 Switch off the power supply to the heating system

9.2.2 Bleeding the gas flow pipe

- Close the gas valve (fig. 85).
- Open the screw plug on the testing nipple of the gas supply pressure and for purging (fig. 86, **item 1**) by 2 turns and install a hose.

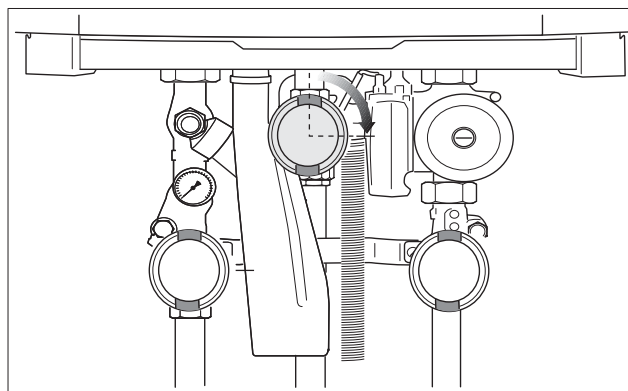


fig. 85 Closing the gas valve

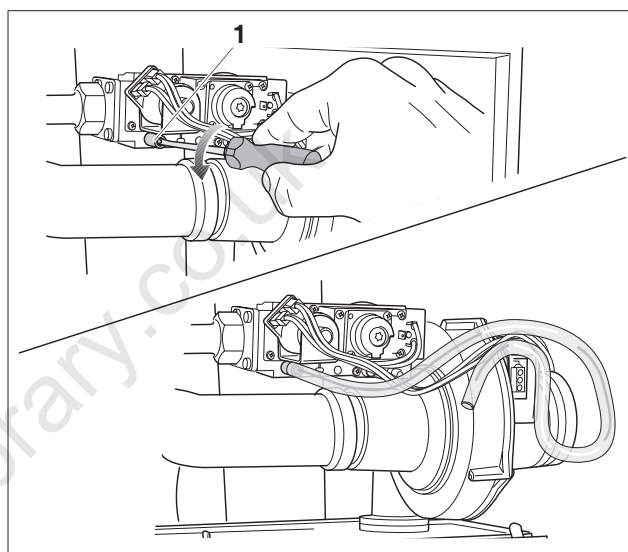


fig. 86 Bleeding the gas flow pipe

- Slowly open the gas valve by pushing on the gas valve and turning it anticlockwise through $\frac{1}{4}$ rotation (fig. 87). The gas valve is open when it is in the vertical position.
- Purge the gas supply into a well ventilated area.
- Close the gas shut-off valve when no more air is present (fig. 85).
- Remove the hose and tighten the screw plug on the testing nipple again.



NOTE

- Test the tightness of the measuring nipple(s) used.

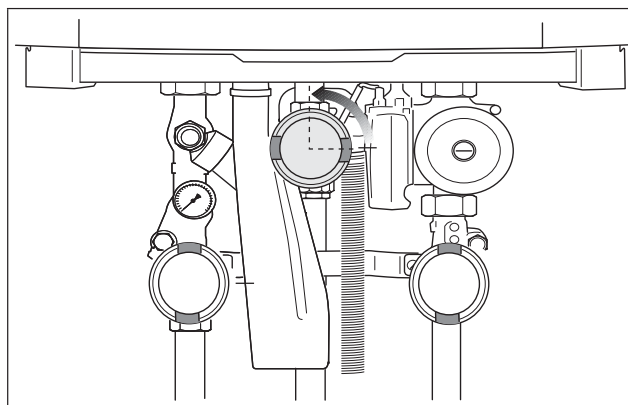


fig. 87 Opening the gas valve

9.2.3 Gas consumption test

- Isolate all other appliances.
- Set the boiler to full load.
- Ensure that there is no modulating of the fan gas valve by operating the test mode.

- Carry out the gas consumption procedure as described in "Essential Gas Safety" 3rd edition on pages 169-176.

9.2.4 Checking the flue gas connection

Check the following points:

- Has the prescribed flue gas system been used (see section 7.4 "Flue gas connection", page 34)?
- Have the configuration instructions from the relevant flue gas system installation instructions been observed?
- Ensure all flue system connections made correctly. Has the annual CO₂ and NO_x clearance to combustible materials been measured? Have the permissible maximum length limit values from the flue gas system installation instructions been observed?

9.2.5 Checking the appliance configuration



NOTE

The burner must only be put into use with the right injectors (table 13).

- Consult the relevant gas utility company for the type of gas supply.
- Check that the actual gas supply is in accordance with the type of gas supply specified on the gas classification label (fig. 88).

Boiler	Type of gas supply	Gas injector diameter in mm
GB162-80	Natural gas H	8.4
GB162-100	Natural gas H	8.4

table 13 Gas injector diameter

Type of gas supply	Factory presetting for the gas burner
Natural gas H	Delivered ready for operation, adjusted to Wobbe index 14.1 kWh/m ³ (with reference to 15 °C, 1013 mbar), applicable to Wobbe index range 12.7 to 15.2 kWh/m ³ . Markings on gas classification label: Configured category: G 20 – 2H.

table 14 Factory presetting for the gas burner

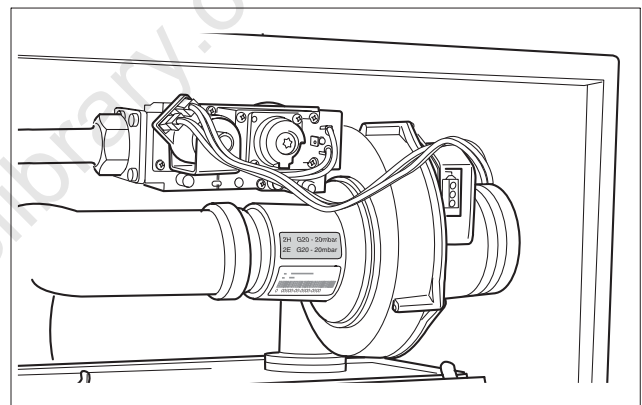


fig. 88 Checking the gas classification label

9.2.6 Measuring the gas inlet pressure (working pressure)

- Open at least two thermostatic radiator valves. Do not switch on the boiler.
- Push on the control panel to open it (fig. 73, page 56).
- Switch off the power supply to the heating system (fig. 89).

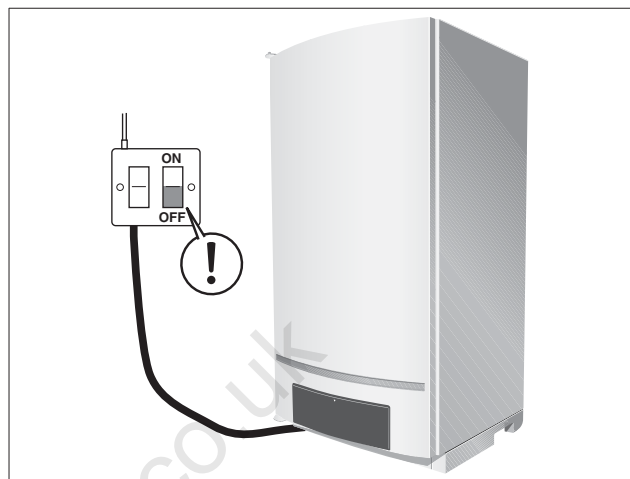


fig. 89 Switch off the power supply to the heating system

- Close the gas valve in a clockwise direction (fig. 90).
- Turn the vent key through a quarter rotation to undo the boiler door lock (fig. 75, **see detailed picture**, page 57).
- Push the fastener down (fig. 75) and open the boiler door.

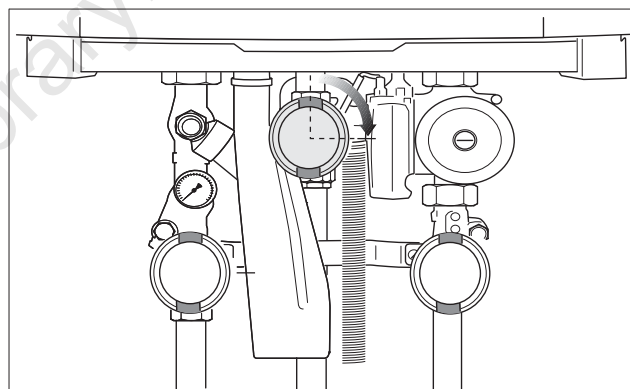


fig. 90 Closing the gas valve

- Open the screw plug on the testing nipple for the gas hook-up pressure and for purging by 2 turns (fig. 91, **item 1**).
- Reset the digital pressure gauge to "0".



NOTE

Throughout the measuring operation, keep the digital pressure gauge in the same position (horizontal or vertical) in which it was reset to "0".

- Connect the pressure gauge connection tube to the positive port of the testing nipple (fig. 91, **item 2**).
- Slowly open the gas valve by pushing on the gas valve and turning it $\frac{1}{4}$ rotation in an anticlockwise direction (fig. 87, page 61). The gas valve is open when it is in the vertical position.

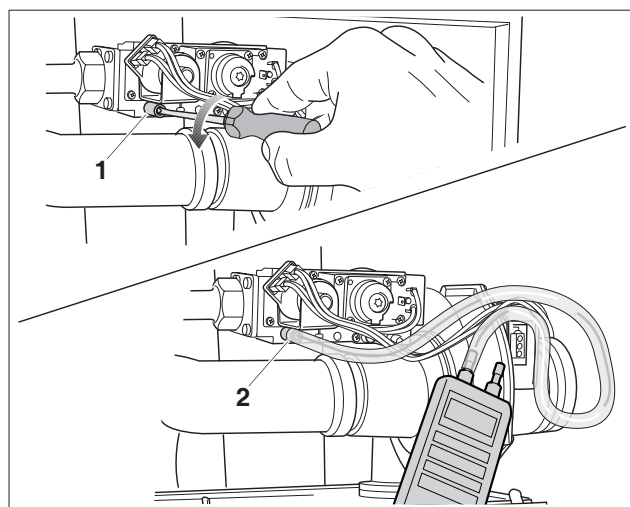


fig. 91 Measuring the gas supply pressure

- Switch on the heating system by pressing the mains switch of the Logamatic BC10 basic controller (fig. 92, **item 1**).
- Press and hold the "Chimney sweep" button (fig. 92, **item 3**) (approx. two seconds), until the dot in the right-hand bottom corner of the display (fig. 92, **item 9**) appears. See also table 9, "Flue gas test", page 52.
- After the "Burner" LED (fig. 92, **item 6**) has lit up wait for one minute until the boiler is burning at full load.
- Measure the gas supply pressure and enter it in the commissioning log book, page 75.

The gas supply pressure must be:

- for natural gas **H** min. 17 mbar, max. 25 mbar, nominal supply pressure 20 mbar.
- Press the "Service" button (fig. 92, **item 4**) repeatedly until the temperature reading is shown in the display.
- Press the "Chimney sweep" button (fig. 92, **item 3**) to clear the reading. Also see table 9, "Flue gas test", page 52.



DANGER OF FATAL ACCIDENT

from explosive fumes.

WARNING!

- Check the testing nipples used for leaks.
- Only use approved detection products to locate leaks.



NOTE

- Check the gas supply pipe or contact the relevant gas utility company if the required supply pressure is not available.
- If the supply pressure is too high, a gas pressure regulator must be integrated upstream of the gas fitting. Contact the gas utility company.

- Close the gas valve
- Remove the gauge-connection tube and tighten the screw plug on the testing nipple again.
- Open the gas valve again by pushing on the gas valve and turning it ¼ rotation in an anticlockwise direction (fig. 83).

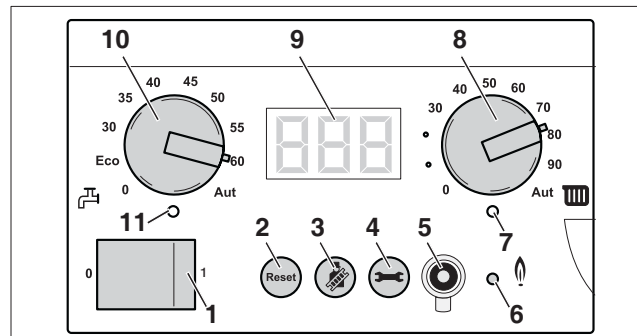


fig. 92 BC10 basic controller

Item 1: Mains switch

Item 2: "Reset" button

Item 3: "Chimney sweep" button

Item 4: "Service" button

Item 5: Connection possibility for the diagnosis connector

Item 6: "Burner" (On/Off) LED

Item 7: "Heat demand" LED

Item 8: Maximum CH flow temperature dial

Item 9: Display

Item 10: DHW temperature dial

Item 11: "DHW mode" LED

9.2.7 Checking and adjusting the gas-/air- ratio

- Open at least two thermostatic radiator valves.
Do not switch on the boiler.
- Push on the control panel to open it (fig. 73, page 56).
- Switch off the heating system by pressing the mains switch of the Logamatic BC10 basic controller (fig. 93, **item 1**).
- Close the gas valve (fig. 90).
- Turn the vent key through a quarter rotation to undo the boiler door lock (fig. 75, **see detailed picture**).
- Push the fastener down (fig. 75) and open the boiler door.

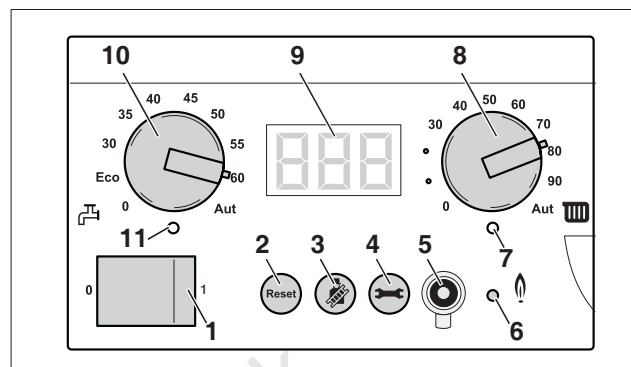


fig. 93 BC10 basic controller

- Open the screw plug on the testing nipple for the burner pressure by 2 turns (fig. 94, **item 1**).
- Set the pressure gauge to "0".



NOTE

Throughout the measuring operation, keep the digital pressure gauge in the same position (horizontal or vertical) in which it was reset to "0".

- Use a connection tube to connect the positive port of the pressure gauge to the testing nipple for burner pressure (fig. 94, **item 2**).
- Slowly open the gas valve by pushing on the gas valve and turning it $\frac{1}{4}$ rotation in an anticlockwise direction (fig. 87).
- Switch on the heating system by pressing the mains switch of the Logamatic BC10 basic controller (fig. 93, **item 1**).
- Activate the Service mode in accordance with the "Service mode" menu (table 10, page 53).
- Set the capacity to minimum (part load) according to the "Service mode" menu (table 10, page 53).
- After the "Burner" LED (fig. 93, **item 6**) has lit up wait for one minute until the boiler is burning at part load.

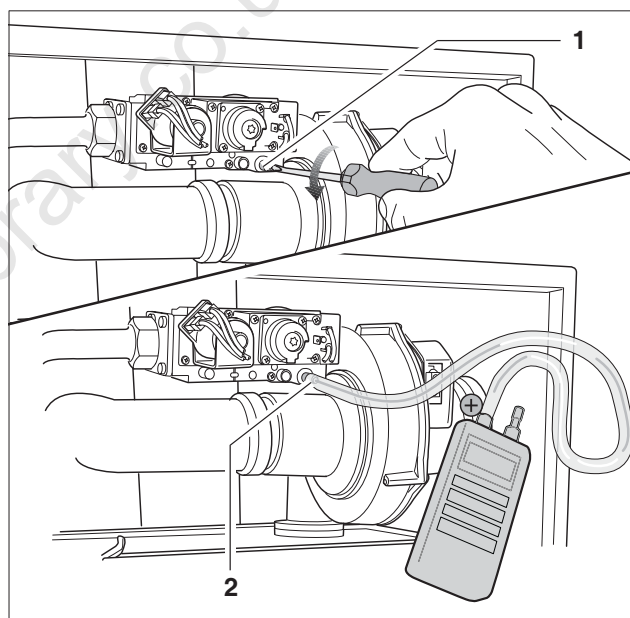


fig. 94 Checking the gas/air ratio

- Read the differential pressure during service mode. The differential pressure ($p_{\text{Gas}} - p_{\text{Air}}$) must be -5 Pa ($\pm 5 \text{ Pa}$) (indication on the pressure gauge: -10 to 0 Pa) (fig. 95).
- Enter the result in the commissioning log book (see section 9.5 "Commissioning record log book", page 75).

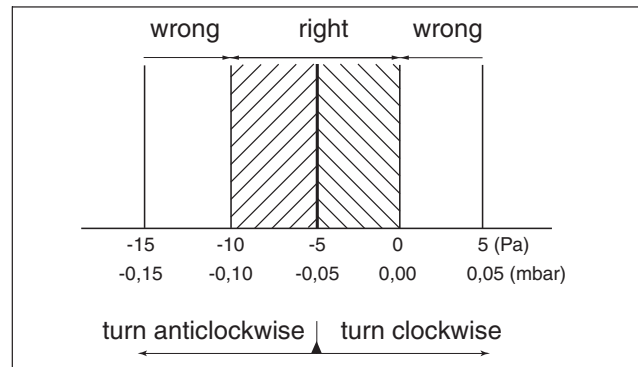


fig. 95 Air/gas difference at low load

- If the gas/air ratio is incorrect, it must be adjusted on the set screw (Torx 40 H) (fig. 96, **item 1**). The set screw is located behind the screw-on cover (Torx 40 H).
- Press the "Chimney sweep" button (fig. 93, **item 3**) until the dot disappears from the display.
- Switch off the heating system by pressing the mains switch of the Logamatic BC10 basic controller (fig. 93, **item 1**).
- Close the gas valve (fig. 90).
- Remove the measuring devices.
- Tighten the screw in the burner pressure measuring nipple.
- Slowly open the gas valve by pushing on the gas valve and turning it $\frac{1}{4}$ rotation in an anticlockwise direction (fig. 87).
- Switch on the heating system by pressing the mains switch of the Logamatic BC10 basic controller (fig. 93, **item 1**).
- Press and hold the "Chimney sweep" button (fig. 92, **item 3**) (approx. two seconds), until the dot in the right-hand bottom corner of the display (fig. 92, **item 9**) appears. See also table 9, "Flue gas test", page 52.
- After the "Burner" LED (fig. 92, **item 6**) has lit up wait for one minute until the boiler is burning at full load.

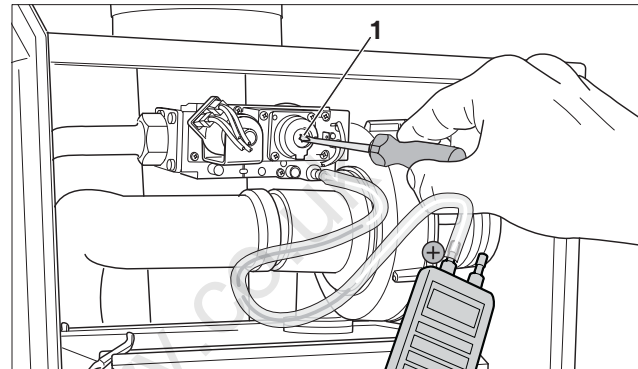


fig. 96 Adjusting the gas/air ratio



WARNING!

DANGER OF FATAL ACCIDENT

from explosive fumes.

- Check the testing nipples used for gas tightness.
- Only use approved detection products to locate leaks.

**DAMAGE TO THE INSTALLATION**

due to short circuits.

CAUTION!

- Cover any hazardous locations prior to locating the leaks.
- Do not spray the leak detection product on cable runs, plugs or electrical wiring. Do not let it drip onto them either.
- Press the "Chimney sweep" button (fig. 92, **item 3**) to clear the reading. See also table 9, "Flue gas test", page 52.
- Check that the boiler performance is still at the required value. See table „Settings", page 55.

9.2.8 Carrying out a leakage test in operating conditions

**WARNING!****DANGER OF FATAL ACCIDENT**

from explosive fumes.

Pipes and fittings may leak after commissioning activities have been carried out.

- Only use approved detection products to locate leaks.
- Press and hold the "Chimney sweep" button (fig. 97, **item 3**) (approx. two seconds), until the dot in the right-hand bottom corner of the display (fig. 97, **item 9**) appears. See also table 9, "Flue gas test", page 52.
- After the "Burner" LED (fig. 97, **item 6**) has lit up wait for one minute until the boiler is burning at full load.
- Use a foaming product to check all sealing locations in the total gas circuit of the burner while the burner is active.

**DAMAGE TO THE INSTALLATION**

due to short circuits.

CAUTION!

- Cover any hazardous locations prior to locating the leaks.
- Do not spray the leak detection product on cable runs, plugs or electrical wiring. Do not let it drip onto them either.
- Press the "Chimney sweep" button (fig. 97, **item 3**) to clear the reading. See also table 9, "Flue gas test", page 52.

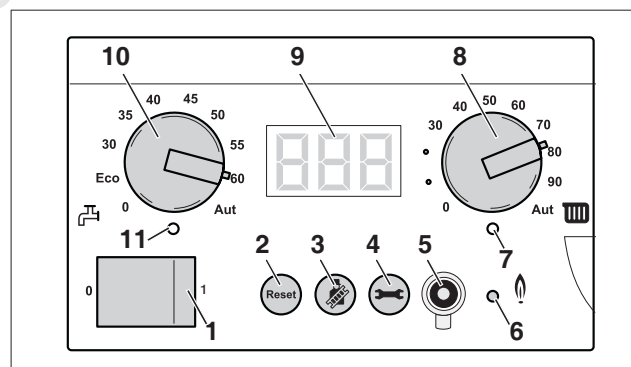


fig. 97 BC10 basic controller

9.2.9 Measuring the flue gases CO₂ emissions

- Open at least two thermostatic radiator valves. Do not switch on the boiler.
- Push on the control panel to open it (fig. 73).
- Switch off the heating system by pressing the mains switch of the Logamatic BC10 basic controller (fig. 98, **item 1**).

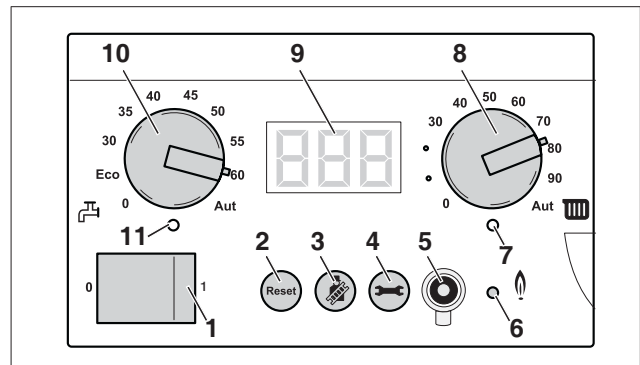


fig. 98 BC10 basic controller

- Remove the cover from the flue gas measuring point (fig. 99, **item 1**).
- Connect the flue gas analyser to the left-hand measuring point (fig. 99).
- Switch on the heating system by pressing the mains switch of the Logamatic BC10 basic controller (fig. 98, **item 1**).
- Press and hold the "Chimney sweep" button (fig. 98, **item 3**) (approx. two seconds), until the dot in the right-hand bottom corner of the display (fig. 98, **item 9**) appears. See also table 9, "Flue gas test", page 52.
- After the "Burner" LED (fig. 98, **item 6**) has lit up wait for one minute until the boiler is burning at full load.
- Measure the carbon monoxide content at the flue gas measuring point (fig. 99).

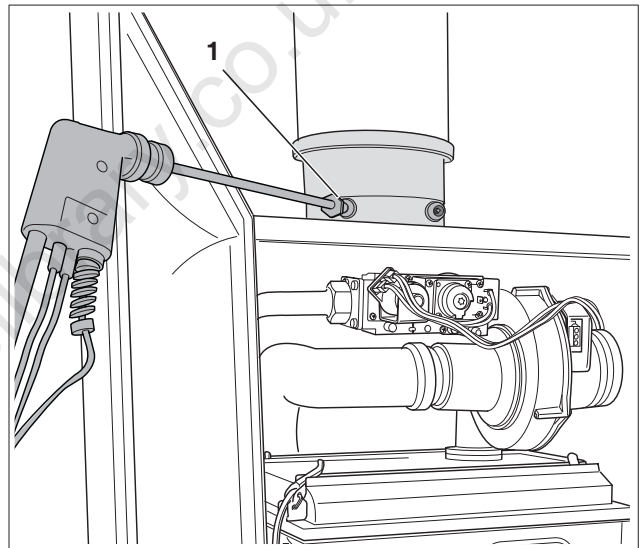


fig. 99 Measuring the gas supply pressure

The CO values in air-free condition must be less than 400 ppm or 0.04 vol. %.

Values of 400 ppm or more indicate an incorrect burner adjustment (see section 9.2.7, page 65), a dirty gas burner or heat exchanger or burner faults.

- You must determine and remove the cause (see section 12, page 83).
- Press the "Chimney sweep" button (fig. 98, **item 3**) to clear the reading. See also table 9, "Flue gas test", page 52.
- Switch off the heating system by pressing the mains switch of the Logamatic BC10 basic controller (fig. 98, **item 1**).
- Remove the flue gas analyser and fit the cover back onto the flue gas measuring point (fig. 99, **item 1**).
- Switch on the heating system by pressing the mains switch of the Logamatic BC10 basic controller (fig. 98, **item 1**).

- Press on the control panel to close it (fig. 107, page 73).

9.2.10 Carrying out a function test

- During initial start-up and annual inspection and/or needs-oriented servicing, make sure that all control, regulating and safety devices are in full working order and, if applicable, check them for correct adjustment.
- The gas and water circuits must be tested for leaks (see sections 9.2.1 and 9.2.8).

9.2.11 Measuring the ionisation current

- Press on the control panel to open it (fig. 73, page 56).
- Open at least two thermostatic radiator valves. Do not switch on the boiler.
- Switch off the heating system by pressing the mains switch of the Logamatic BC10 basic controller (fig. 100, **item 1**).
- Turn the vent key through a quarter turn to undo the boiler door lock (fig. 75).
- Push the fastener down (fig. 75) and open the boiler door.

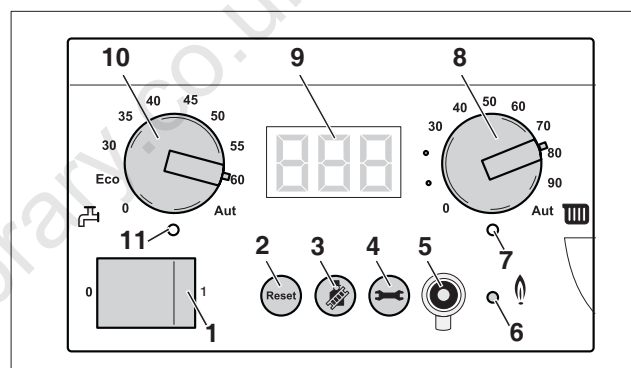


fig. 100 BC10 basic controller

- Undo the plug and socket connection of the monitoring cable (fig. 101).

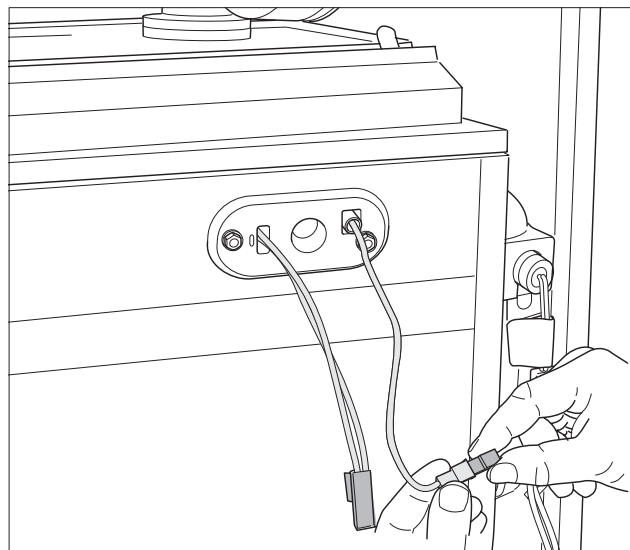


fig. 101 Removing the ionisation electrode plug and socket connection

- Connect the multimeter in series (fig. 102). Select the μA DC range on the multimeter. The multimeter must have a resolution of at least $1 \mu\text{A}$.
- Switch on the heating system by pressing the mains switch of the Logamatic BC10 basic controller (fig. 100, **item 1**).
- Activate the Service mode in accordance with the "Service mode" menu (table 10, page 53).
- Set the capacity to minimum (part load) according to the "Service mode" menu (table 10, page 53).
- After the "Burner" LED (fig. 100, **item 6**) has lit up wait for one minute until the boiler is burning at part load.
- Measure the ionisation current. The ionisation current must be $> 5 \mu\text{A}$ DC at part load operation.
- Enter the result in the commissioning log book (see section 9.5 "Commissioning record log book", page 75).
- If the result is not as it should be, check the gas/air ratio (section 9.2.7, page 65) or check the ionisation electrode (section 12.2.1, page 84).
- Press and hold the "Chimney sweep" button (fig. 100, **item 3**) (approx. two seconds), until the dot in the right-hand bottom corner of the display (fig. 100, **item 9**) appears. See also table 9, "Flue gas test", page 52.
- Switch off the heating system by pressing the mains switch of the Logamatic BC10 basic controller (fig. 100, **item 1**).
- Remove the multimeter and reconnect the monitoring cable.
- Switch on the heating system by pressing the mains switch of the Logamatic BC10 basic controller (fig. 100, **item 1**).
- Check that the boiler performance is still at the required value. See the "Service mode" menu (table 10, page 53).

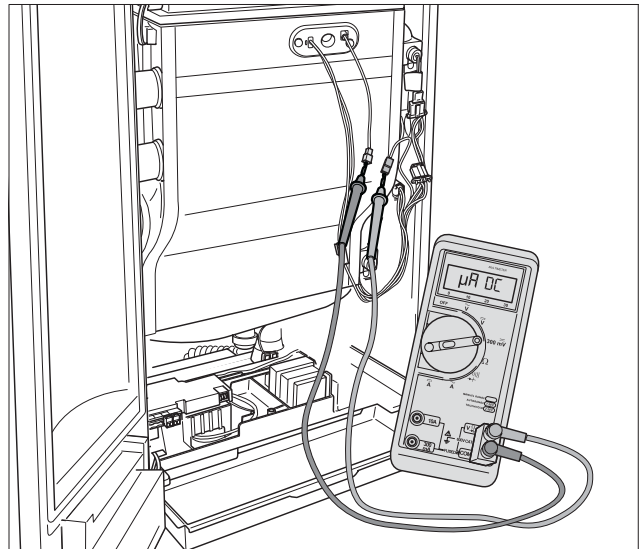


fig. 102 Measuring the ionisation current

9.3 Boiler settings

9.3.1 Setting the heating capacity

- Set the required heating capacity on the BC10 according to the "Settings" menu (table 12, page 55). See table 15 when making these settings.

Display indication [%]	Rated heating capacity at 40/30 °C [kW]	
	GB162-80	GB162-100
L20	—	20.0
L25	20	25.0
L30	24.3	29.9
L35	28.6	34.9
L40	32.9	39.9
L45	37.2	44.8
L50	41.5	49.8
L55	45.8	54.8
L60	50.1	59.8
L65	54.4	64.7
L70	58.7	69.7
L75	63.0	74.7
L80	67.3	79.6
L85	71.6	84.6
L90	75.9	89.6
L95	80.2	94.5
L--	84.5	99.5

table 15 Heating capacity in kW (as a percentage)

9.3.2 Setting the maximum CH flow temperature

- Set the upper CH flow temperature limit for heating mode using the "Maximum CH flow temperature" dial (fig. 103, **item 8**); see table 16.

This limit value does not apply to DHW mode.

Dial position	Explanation
0	No supply to radiators (e.g. only DHW mode)
30 – 90	The temperature is set permanently on the BC10 and cannot be changed with a room controller (e.g. RC30).
Aut	The temperature is determined automatically on the basis of the heating curve. If no room controller is connected, 90 °C is the maximum CH (boiler) flow temperature.

table 16 Setting of "Maximum CH (boiler) flow temperature" dial

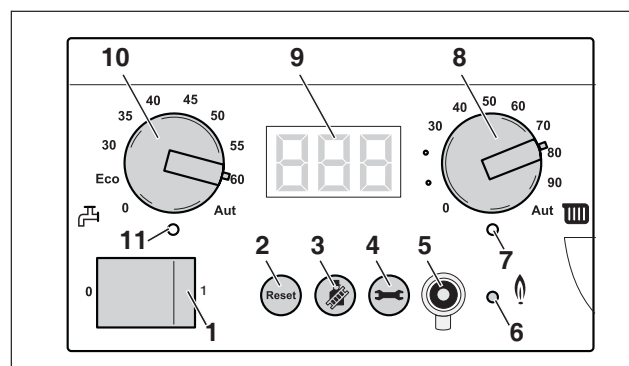


fig. 103 BC10 basic controller

9.3.3 Setting the pump run-over time

Set the pump run-over time to 24 hours if the heating system is controlled depending on room temperature, and there is a risk of parts of the heating system not controlled by the room controller freezing (e.g. radiators in the garage).

- Set the pump run-over time according to the "Settings" menu (table 12, page 55).

9.3.4 Switching DHW mode on/off



NOTE

If this setting  is seen, it switches off the frost protection for the hot water cylinder (if present).

- Set the DHW mode according to the "Settings" menu (table 12, page 55).

9.3.5 Setting the DHW temperature

- Set the DHW temperature dial (fig. 104, **item 10**) to the required temperature of the hot water in the hot water cylinder (see table 17).

Dial position	Explanation	Legionella information
0	DHW mode is off (if applicable only heating mode)	There is no risk of legionella contamination
ECO	Do not use this setting!	
30 – 45	DHW temperature in °C	The risk is very low if the DHW mode is used every day.
45 – 60	DHW temperature in °C	There is no risk of legionella contamination. This position is recommended.
Aut	DHW temperature is 60 °C	There is no risk of legionella contamination

table 17 Settings on the DHW temperature dial

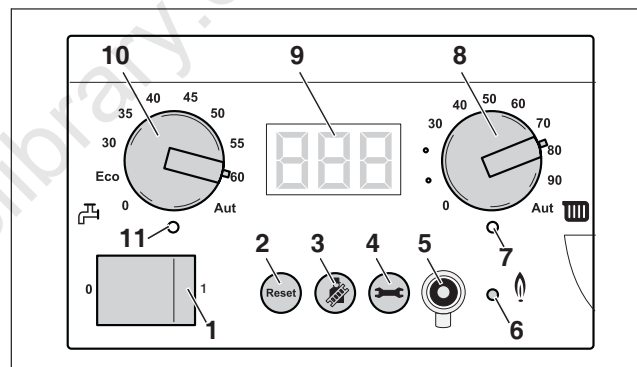


fig. 104 BC10 basic controller

9.4 Final activities

9.4.1 Fitting a second identification plate

A second identification plate is supplied with the unit (see fig. 105). You can fit this identification plate to any random location on the boiler.

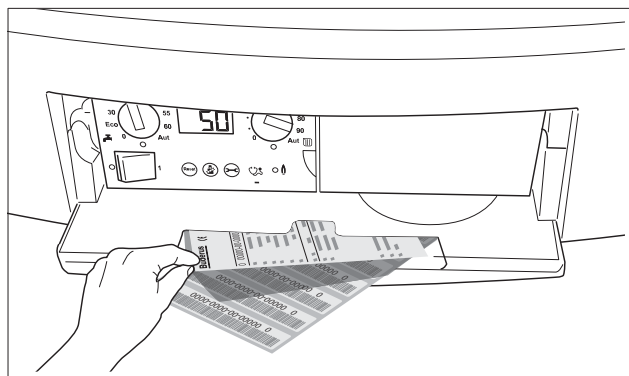


fig. 105 Removing the second identification plate

9.4.2 Closing the boiler door and the control panel

- Close the boiler door (fig. 106) and lock the fastener by turning the vent screw through $\frac{1}{4}$ rotation in a clockwise direction.

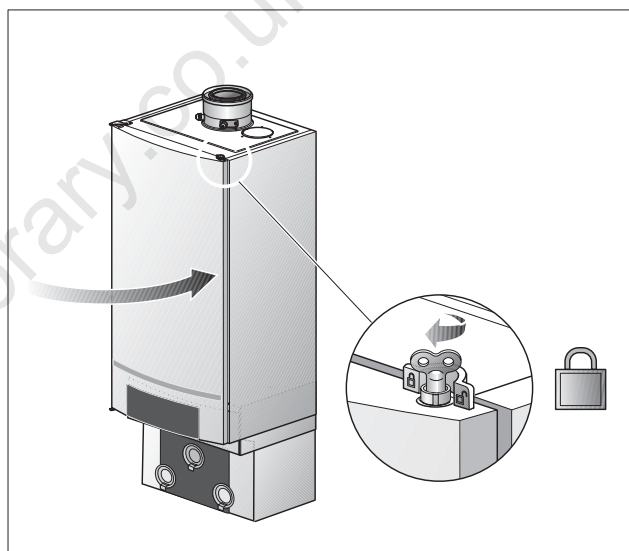


fig. 106 Closing the boiler door

- Push on the control panel to close it (fig. 107).

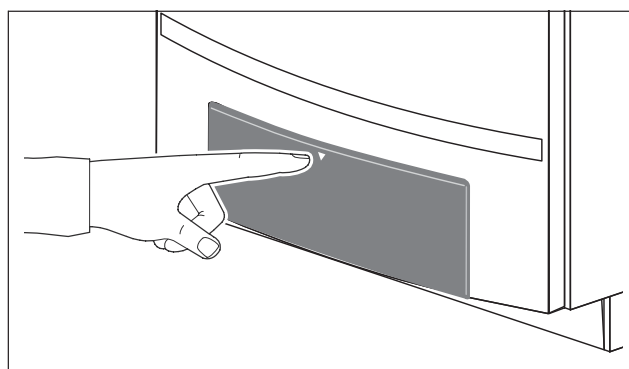


fig. 107 Closing the control panel

9.4.3 Handing over

After completing the installation and commissioning of the system the installer should hand over to the end user by the following actions:

- Hand over all relevant documentation to the end user and explain his/her responsibilities under the relevant national and regional regulations.
- Explain and demonstrate the starting and shutting down procedures.

**NOTE**

During initial start-up and annual servicing, make sure that all control, regulating and safety devices are in full working order and, if applicable, check for correct adjustment.

**NOTE**

Always keep the user manual and installation and servicing instructions by the boiler.

9.5 Commissioning record log book

- Enter your signature and the date after completing the start-up activities.

Start-up activities	Page	Measurement results	Remarks
1. Filling and pressure testing the heating system – Pre-pressure expansion vessel (refer to the installation instructions for the expansion vessel) – Heating system filling pressure	56 56	☐ ____ bar ____ bar	
2. Write down the gas characteristics: Wobbe index Operating heat value		____ kWh/m ³ ____ kWh/m ³	
3. Checking for gas leaks	60	☐	
4. Bleeding the gas flow pipe	61	☐	
5. Checking the flue gas connection	62	☐	
6. Checking the appliance configuration	62	☐	
7. Measuring the gas supply pressure (working pressure)	63	____ mbar	
8. Checking and adjusting the gas/air ratio	65	____ Pa/mbar	
9. Carrying out a leakage check in operating conditions	67	☐	
10. Measuring the carbon monoxide content (CO), air free	68	____ ppm	
11. Function testing Measure the ionisation current	69 69	☐ ____ µA	
12. Boiler settings	71	☐	
13. Fitting an identification plate	73	☐	
14. Closing and locking the boiler door	73	☐	
15. Informing the user, handing over technical documents	74	☐	
Confirming proper commissioning			
Company stamp/signature/date			

10 Shutting down the heating system

10.1 Shutting down the heating system using the basic controller

Shut down your heating system by means of the Logamatic BC10 basic controller. When the system is shut down, the burner is automatically switched off.

Further information about the use of the Logamatic BC10 basic controller is provided in section „Operation“, page 49.

- Push on the control panel to open it (fig. 108).

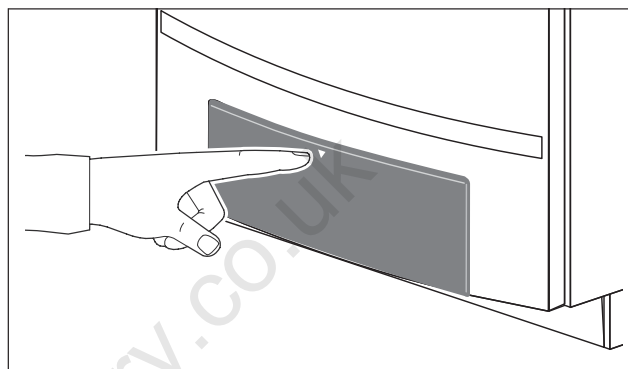


fig. 108 Opening the control panel

- Switch off the heating system by pressing the mains switch of the BC10 (fig. 109, **item 1**).

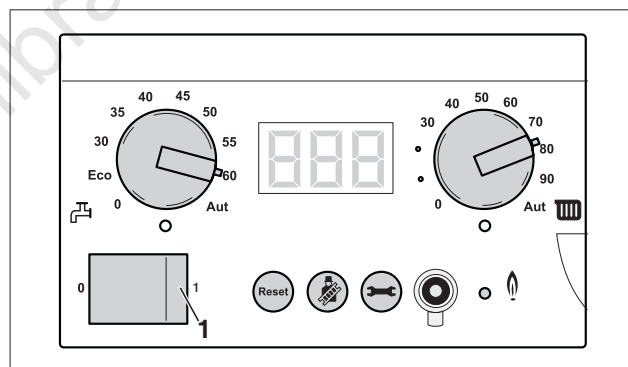


fig. 109 BC10 basic controller

- Close the main gas supply or the gas valve (fig. 110).

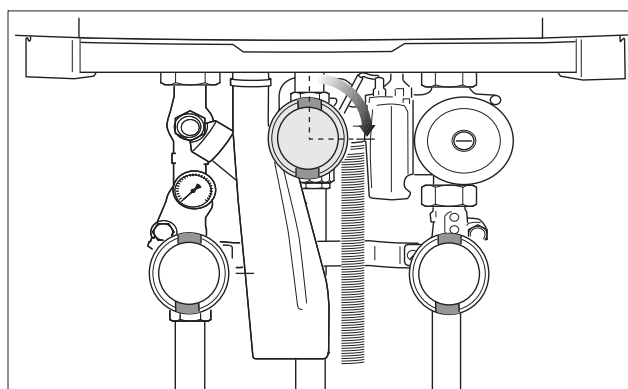


fig. 110 Closing the gas valve

10.2 Shutting down the heating system if there is a risk of freezing (interruption of use)



CAUTION!

DAMAGE TO THE INSTALLATION

due to freezing.

The heating system may freeze up after some time in certain situations, e.g. after a power failure, when the supply voltage has been switched off, in case of faulty gas supply, a boiler fault etc.

- Ensure that the heating system is permanently operational (especially if there is a risk of freezing).

If conditions are such that the heating system has to be shut down for a long period while there is a risk of freezing, the water must be drained from the heating system.

- Push on the control panel to open it (fig. 108).
- Switch off the heating system by pressing the mains switch of the BC10 (fig. 109) .
- Close the main gas supply or the gas valve (fig. 110).
- Drain the heating water at the lowest point of the heating system, using the drain cock or the radiator (fig. 111). The (automatic) air vent at the highest point of the heating system/radiator must be open.

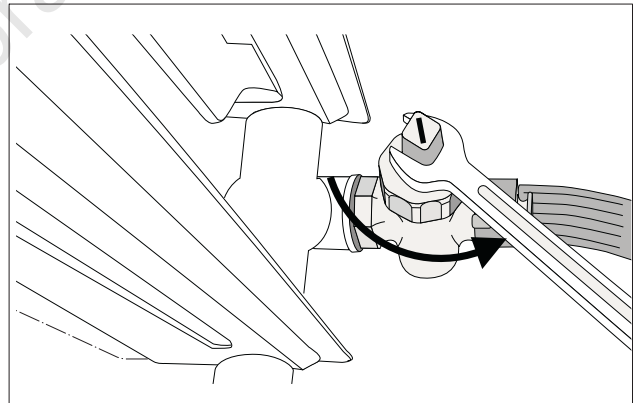


fig. 111 Draining the heating system

11 Inspection

- Offer your customer an annual inspection and maintenance contract. The activities to be included in an annual inspection and maintenance contract can be found in the inspection and service record log book (see pages 81 and 91).



CAUTION!

DAMAGE TO THE INSTALLATION

due to insufficient or improper cleaning and maintenance.

- Inspect and clean the heating system once a year.
- Carry out maintenance as required. Immediately remedy faults. This will avoid further damage to the system!

11.1 Preparing the heating system for inspection



WARNING!

DANGER OF FATAL ACCIDENT

due to electric current when the boiler is on.

- Before opening the boiler:
Switch off the power supply to the boiler by isolating the supply and removing the fuse.
 - Secure the heating system so that it cannot be switched on again unexpectedly.
- Switch off the power supply to the heating system (fig. 112).



WARNING!

DANGER OF FATAL ACCIDENT

from explosive fumes.

- Only carry out work on gas pipes and fittings if you are Corgi or ACS licensed.
- Close the gas valve (fig. 113).
 - Close the isolating valves (fig. 113).



fig. 112 Switch off the power supply to the heating system

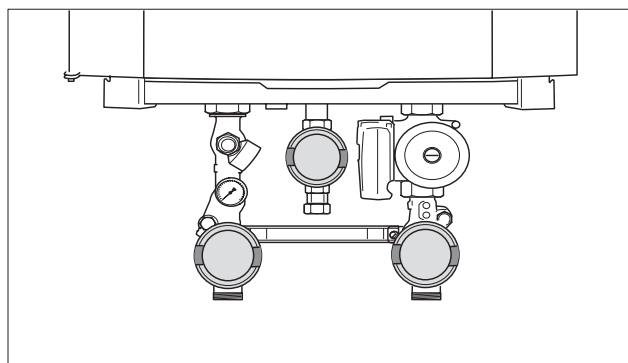


fig. 113 Closing the valves (here: in closed position)

11.2 Opening the boiler door

- Turn the vent key through a quarter rotation to undo the boiler door lock (fig. 114, **see detailed picture**).
- Push the fastener down (fig. 114) and open the boiler door.



NOTE

If the boiler door cannot be swung open completely, remove it (see section 12.1 „Removing the boiler door“, page 83).

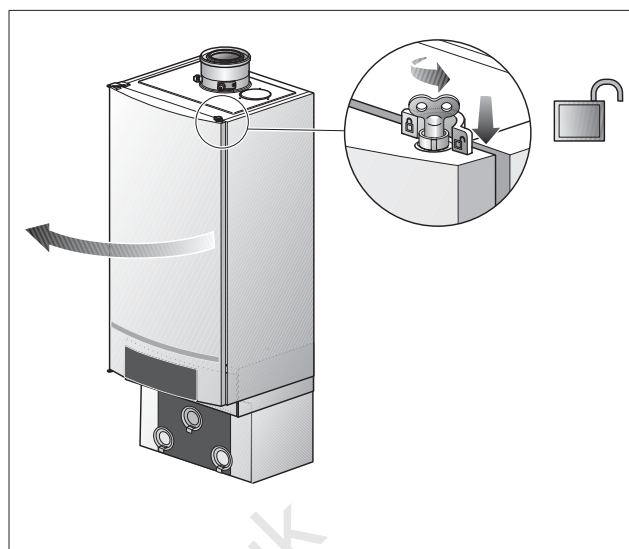


fig. 114 Opening the boiler door

11.3 Carry out a visual check for general signs of corrosion

- Check all gas and water-bearing pipes for signs of corrosion and for leaks.
- Replace any pipes that have corroded.
- Carry out a visual inspection of the burner, heat exchanger, condensate trap, automatic air vent and all fittings in the boiler.

11.4 Gas valve leakage test

Check the internal tightness of the gas fitting on the input side (with the boiler switched off) at a test pressure of 20 mbar for natural gas.

- Open the screw plug on the testing nipple for the gas connection by 2 turns.
- Connect the pressure gauge tube to the testing nipple. The pressure drop allowed after one minute is max. 10 mbar.
- If the pressure drop is higher, check all sealing locations of the gas fitting for leaks using a foaming product. Repeat the pressure test if no leaks are found. Replace the gas fitting if the pressure drop is higher than 10 mbar per minute again (see section 12.2.2 "Removing the gas valve" on page 85 for instructions on how to remove).

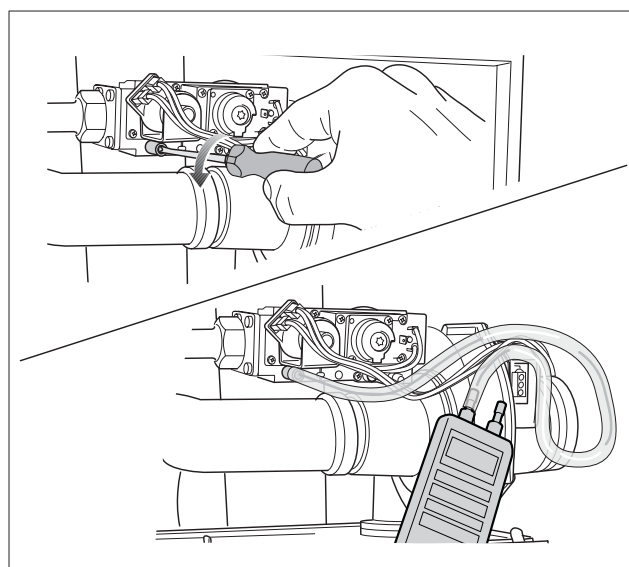


fig. 115 Checking the gas fitting for internal tightness

11.5 Measuring the ionisation current

See section 9.2.11 "Measuring the ionisation current", page 69.

11.6 Measuring the gas inlet pressure (working pressure)

See section 9.2.6 "Measuring the gas inlet pressure (working pressure)", page 63.

11.7 Checking and adjusting the gas-/air-ratio

See section 9.2.7 "Checking and adjusting the gas-/air-ratio", page 65.

11.8 Carrying out a leakage test in operating conditions

See section 9.2.8 "Carrying out a leakage test in operating conditions", page 67.

11.9 Measuring the flue gases CO₂ emissions

See section 9.2.9 "Measuring the flue gases CO₂ emissions", page 68.

11.10 Filling the heating system

See section 9.1 "Filling the heating system", page 56.

11.11 Checking the flue gas connection

See section 9.2.4 "Checking the flue gas connection", page 62.

11.12 Inspection log book

- Enter your signature and the date after completing the inspection activities.

Inspection activities		Date:	Date:	Date:	Date:	Date:	Date:	Date:
		_____	_____	_____	_____	_____	_____	_____
1. Checking the general condition of the heating system.		☐	☐	☐	☐	☐	☐	☐
2. Carrying out a visual inspection and function test of the heating system.		☐	☐	☐	☐	☐	☐	☐
3. Checking the gas and water-bearing system components for: – Operational tightness – Visible corrosion – Signs of wear	See section 9.2.8 "Carrying out a leakage test in operating conditions", page 67. See section 11.3 "Carry out a visual check for general signs of corrosion", page 79.	☐	☐	☐	☐	☐	☐	☐
4. Measuring the ionisation current.	See section 9.2.11 "Measuring the ionisation current", page 69.	_____ μA	_____ μA	_____ μA	_____ μA	_____ μA	_____ μA	_____ μA
5. Measuring the gas supply pressure (working pressure)	See section 9.2.6 "Measuring the gas inlet pressure (working pressure)", page 63.	_____ mbar	_____ mbar	_____ mbar	_____ mbar	_____ mbar	_____ mbar	_____ mbar
6. Checking the gas/air ratio.	See section 9.2.7 "Checking and adjusting the gas-/air- ratio", page 65.	_____ Pa	_____ Pa	_____ Pa	_____ Pa	_____ Pa	_____ Pa	_____ Pa
7. Carrying out a tightness check of the gas circuit in operating conditions	See section 9.2.8 "Carrying out a leakage test in operating conditions", page 67.	☐	☐	☐	☐	☐	☐	☐
8. Measuring the carbon monoxide content (CO), air free.	See section 9.2.9 "Measuring the flue gases CO ₂ emissions", page 68.	_____ ppm	_____ ppm	_____ ppm	_____ ppm	_____ ppm	_____ ppm	_____ ppm

Inspection activities		Date:	Date:	Date:	Date:	Date:	Date:	Date:
		_____	_____	_____	_____	_____	_____	_____
9. Checking the system pressure.	See section 9.1 Filling the heating system, page 56.	☐	☐	☐	☐	☐	☐	☐
– Pre-pressure of expansion vessel (also see installation instructions for expansion vessel)		_____ bar	_____ bar	_____ bar	_____ bar	_____ bar	_____ bar	_____ bar
– Filling pressure		_____	_____	_____	_____	_____	_____	_____
10. Checking the operation and safety of the air intake and flue gas pipe.	See section 9.2.4 "Checking the flue gas connection", page 62.	☐	☐	☐	☐	☐	☐	☐
11. Checking the boiler settings of the control device (in accordance with requirements).	See the documents for the control device.	☐	☐	☐	☐	☐	☐	☐
12. Final check of the inspection activities, documenting the measurement and test results.		☐	☐	☐	☐	☐	☐	☐
13. Confirming proper inspection.								
		Company stamp/ signature	Company stamp/ signature	Company stamp/ signature	Company stamp/ signature	Company stamp/ signature	Company stamp/ signature	Company stamp/ signature

12 Maintenance

- Prepare the system for maintenance as described in the chapter on Inspection (see section 11.1 "Maintenance", page 78).

12.1 Removing the boiler door



NOTE

If the boiler door cannot be fully opened, it may be necessary to remove the door for inspection and maintenance activities. Proceed as follows:

- Unscrew the control panel from the boiler door and hang it on the boiler frame (see fig. 136 "Undoing the screws", page 92).
- Unscrew the bolt from the left-hand top hinge of the boiler door and remove it together with the washer.
- Slightly lift the door and pull it from the hinge. Put the door upright in a safe position and make sure that it cannot fall over.



NOTE

The cover over the electrical connections does not have to be removed from the boiler.

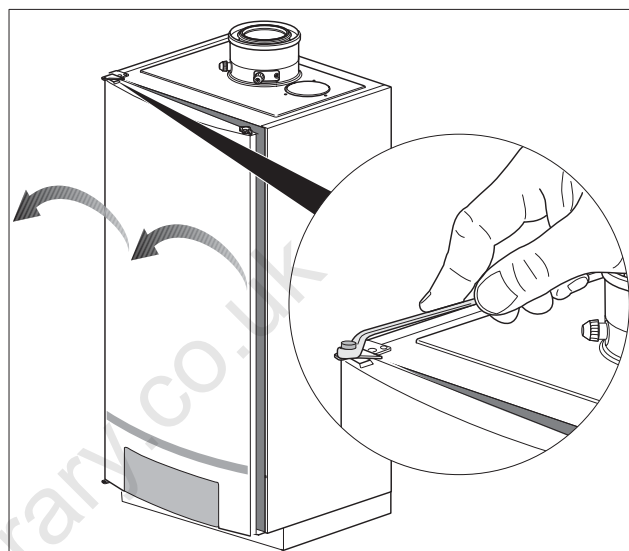


fig. 116 Removing the boiler door

12.2 Cleaning the heat exchanger, burner and condensate trap

The boiler has a self-cleaning coating.



DAMAGE TO THE INSTALLATION

due to short circuits.

CAUTION!

- Do not spray the detergent onto the burner, the glow ignitor, the ionisation electrode or other electrical components.

12.2.1 Removing and checking the glow ignitor and the ionisation electrode

- Undo the connectors for the glow ignitor (fig. 117) and the ionisation electrode (fig. 118).

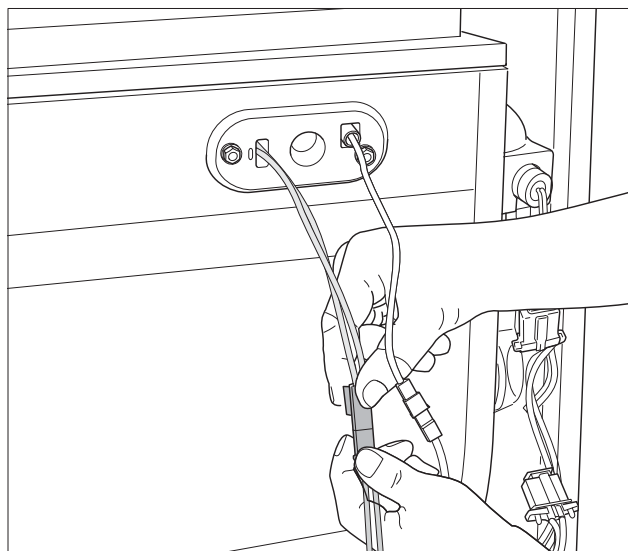


fig. 117 Removing the glow ignitor connector

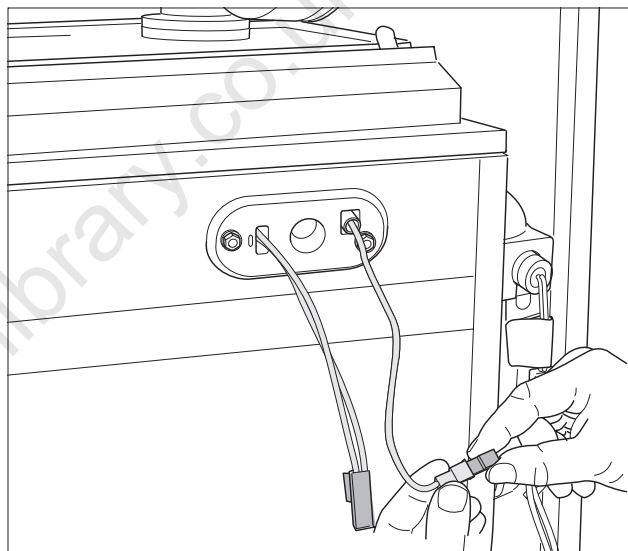


fig. 118 Removing the ionisation electrode connector

- Unscrew the 2 nuts (fig. 119).
- Remove the cover.
- Pull the ignition module with the glow ignitor and the ionisation electrode out of the heat exchanger.

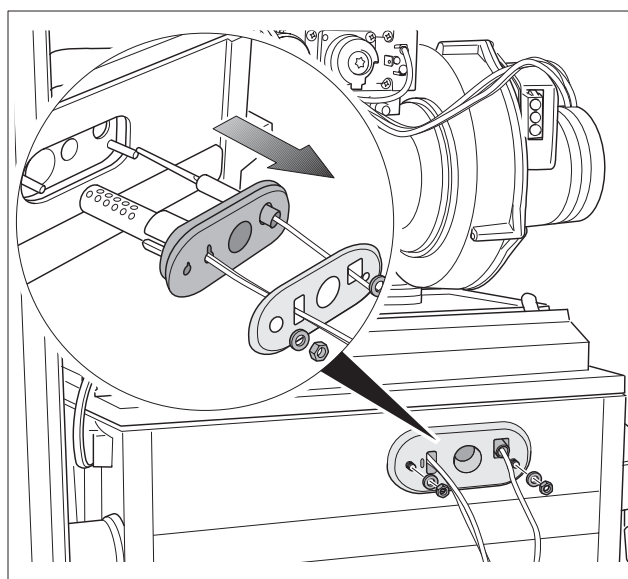


fig. 119 Removing the glow ignitor and the ionisation electrode

- Check the ionisation electrode (fig. 120) and the glow ignitor for dirt, wear or damage.
- Replace the glow ignitor and the ionisation electrode if required.



CAUTION!

DAMAGE TO THE INSTALLATION

by damage to the glow ignitor.

The glow ignitor is made from fragile ceramic material.

- Do not damage the glow ignitor.

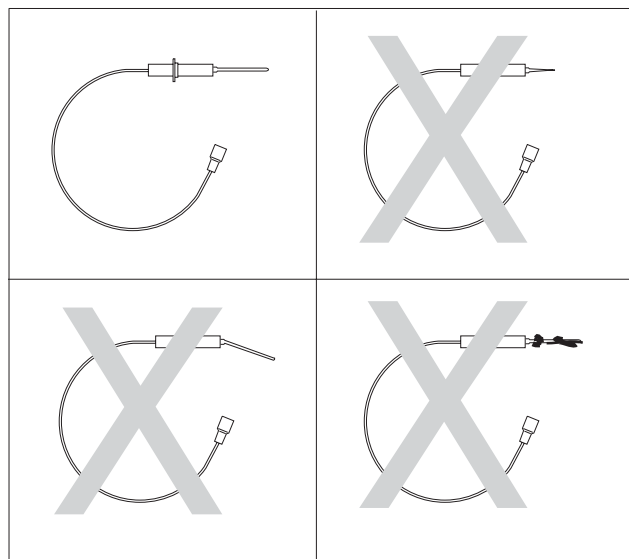


fig. 120 Checking the ionisation electrode

12.2.2 Removing the gas valve

- Undo the gas fitting screw connection (fig. 121, **item 1**) and pull the 4 connectors (fig. 121, **item 2**) from the gas valve.

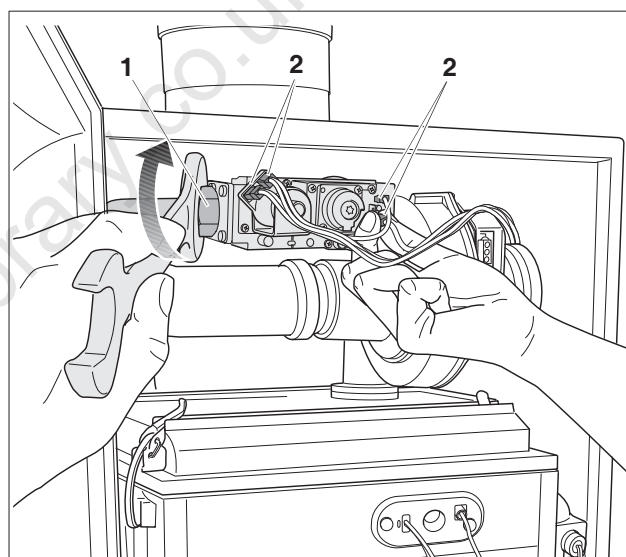


fig. 121 Undoing the connections to the gas fitting

12.2.3 Removing the burner cover with the fan and the gas valve

- Pull the mains connector (fig. 122, **item 1**) from the fan.
- Pull the connector of the harness (fig. 122, **item 2**) from the fan while pushing on the connector lock to loosen it.

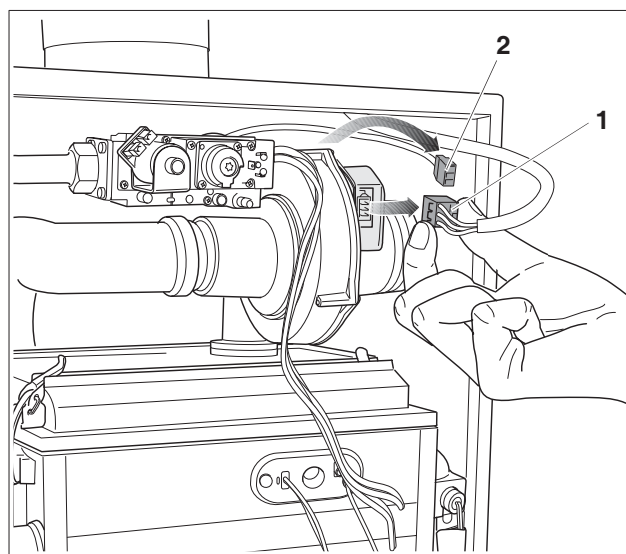


fig. 122 Removing the connectors from the fan

- Pull the air suction tube from the fan (fig. 123).

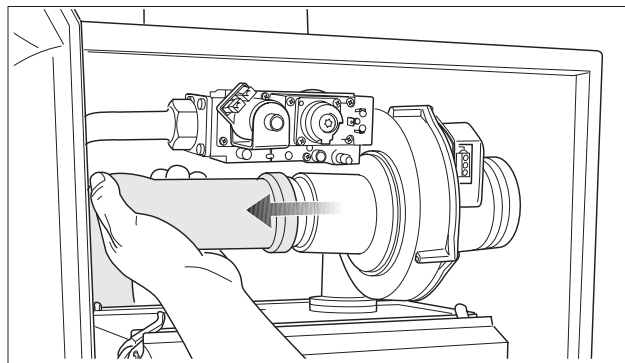


fig. 123 Pulling the air suction tube from the fan

- Carefully open the 4 snap closures on the burner cover (fig. 124). The snap closures may be under tension.
- Remove the snap closures.

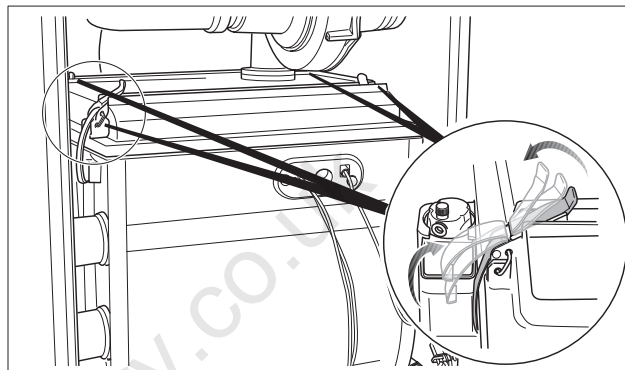


fig. 124 Opening the snap closures

- Remove the burner cover with the gas/air unit (fig. 125).

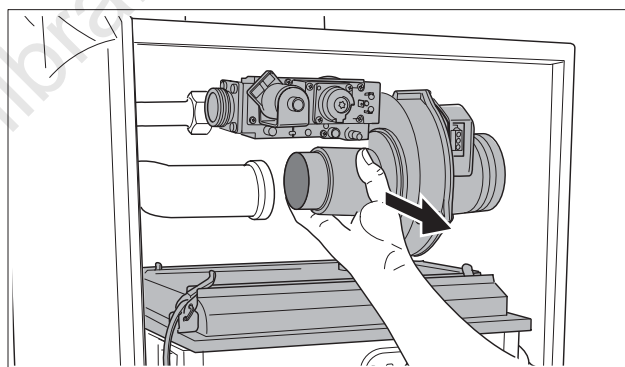


fig. 125 Removing the burner cover with the gas/air unit

12.2.4 Removing the burner and the burner seal

- Remove the burner seal (fig. 126, **item 1**) and replace it if necessary.
- Remove the burner plate (fig. 126, **item 2**) and clean it on all sides using compressed air or a soft brush.

When re-installing the burner plate make sure that the notch is on the right-hand side (fig. 126, **see detailed picture**).

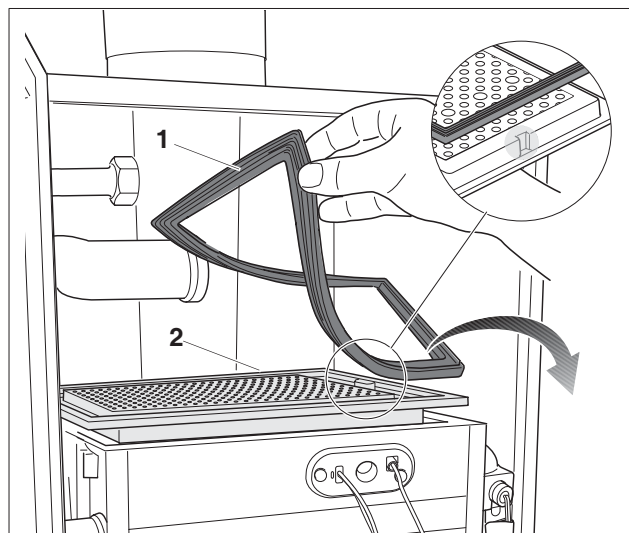


fig. 126 Removing the burner plate and the burner seal

12.2.5 Disconnecting the condensate trap

- Disconnect the condensate trap hose (fig. 127, **item 3**) and the rubber sleeve (fig. 127, **item 2**) from the condensate trap (fig. 127, **item 1**).
- Turn the condensate trap anticlockwise through a quarter rotation (fig. 127).

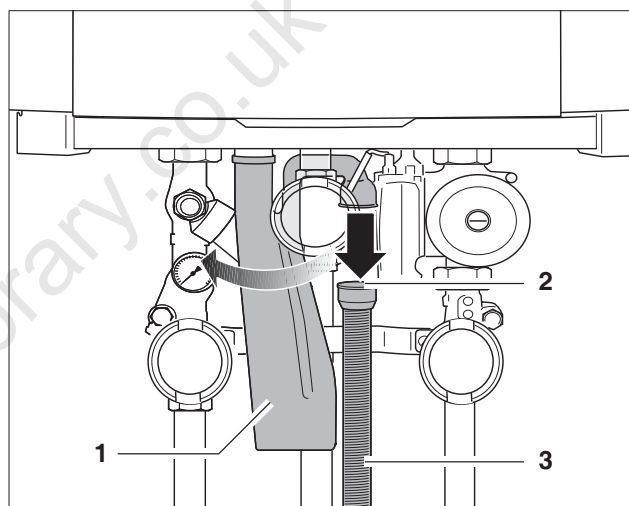


fig. 127 Disconnecting the condensate trap hose

Item 1: Condensate trap

Item 2: Rubber sleeve

Item 3: Condensate trap hose

- Disconnect the condensate trap from the coupling and remove it (fig. 128, **item 1**).
- Rinse the condensate trap to clean it.
- Fill the condensate trap with approx. 1.0 ltr. water before refitting it.



NOTE

The condensate trap has a bayonet connector. After inserting it, the condensate trap must be turned clockwise through $\frac{1}{4}$ rotation until it clicks into place.

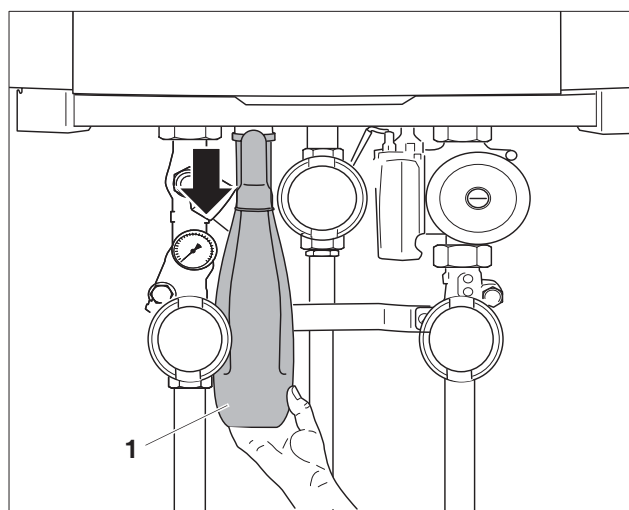


fig. 128 Disconnecting the condensate trap in the pump group

12.2.6 Removing the condensate collector

- Disconnect the flexible condensate drain hose and bend it backwards (fig. 129).

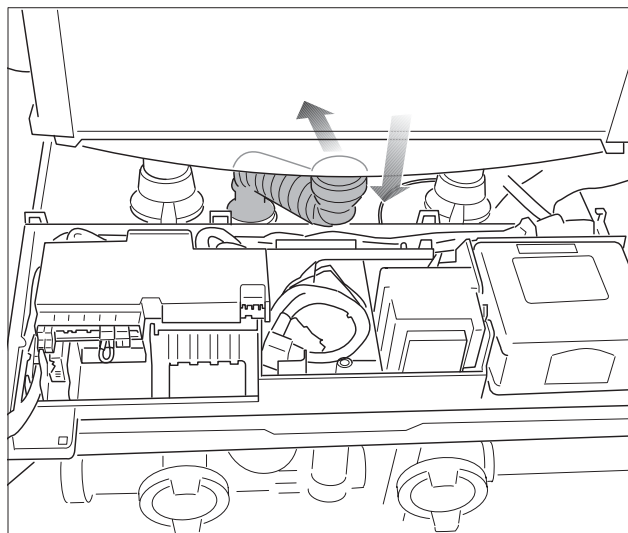


fig. 129 Removing the condensate trap hose

- Open the 2 clamps on the right and left at the bottom of the condensate collector (fig. 130, **item 1**).
- Pull the condensate collector down (fig. 130, **step 1**) and remove it by pulling it towards you (fig. 130, **step 2**).
- Check the condensate collector for damage and replace it if required.

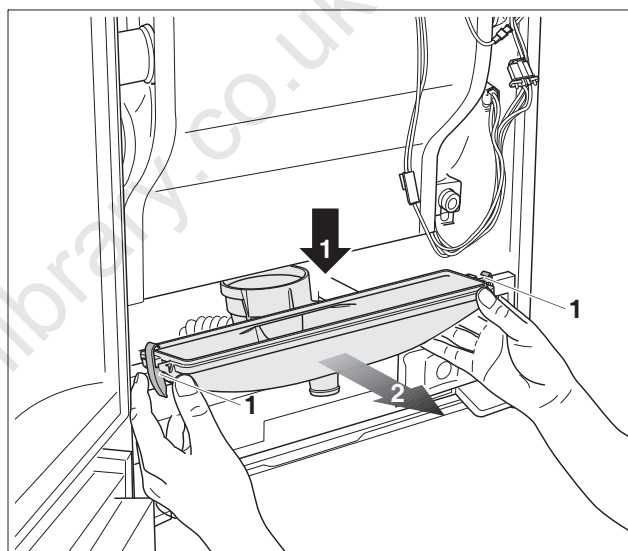


fig. 130 Removing the condensate collector

- Clean the condensate collector mechanically (using compressed air or a soft brush) and rinse it with clean water (fig. 131).

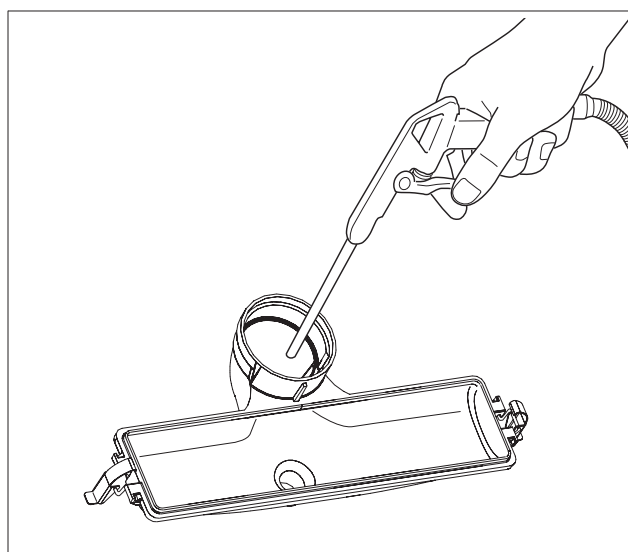


fig. 131 Cleaning the condensate collector

12.2.7 Cleaning the heat exchanger



CAUTION!

DAMAGE TO THE INSTALLATION

- Do not use metal brushes or similar hard cleaning tools



CAUTION!

DAMAGE TO THE INSTALLATION

due to faulty glow ignitor.

The glow ignitor is made from fragile ceramic material.

- Do not damage the glow ignitor.

- Check the bottom and top sides of the heat exchanger for dirt.



CAUTION!

DAMAGE TO THE INSTALLATION

due to dirt particles.

- Cover up the boiler interior, e. g. using a blanket or a cover.

- Clean the heat exchanger with compressed air or a soft brush (fig. 132).



CAUTION!

DAMAGE TO THE INSTALLATION

Due to undesired flue gas or condensate leakage.

- When installing the condensate collector, make sure that the two snap closures close smoothly. If this is not the case, the seal between the condensate collector and the flue pipe at the back of the heat exchanger may be leak.

- Refit the condensate collector.
- Connect the flexible condensate drain hose to the condensate collector.
- Re-install the condensate trap.
- Rinse the heat exchanger with clean water.
- Reassemble all boiler components in reverse order:
 - Burner with burner seal
 - Burner cover with fan and gas valve
 - Gas valve
 - Glow ignitor and ionisation electrode.
- Start up the boiler (see section 9 "Commissioning", page 56).

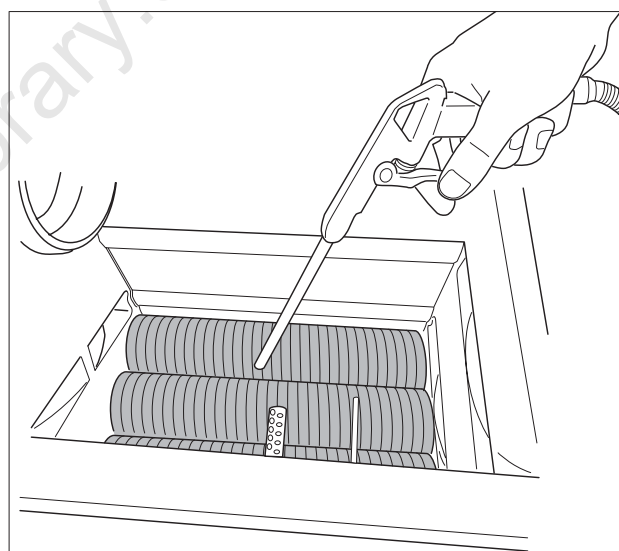


fig. 132 Cleaning the heat exchanger

12.3 Checking and adjusting the gas-/air-ratio

See section 9.2.7 "Checking and adjusting the gas-/air-ratio", page 65.

12.4 Function check in operating conditions

- Slowly open the gas valve by pushing on the gas valve and turning it $\frac{1}{4}$ rotation in an anticlockwise direction (fig. 133).
- Switch on the heating system by pressing the mains switch of the Logamatic BC10 basic controller (fig. 134, **item 1**).
- Set the maximum CH flow temperature dial (fig. 135, **item 1**) and the DHW temperature dial (fig. 135, **item 2**) to the maximum temperatures.
- Enter a heat demand via the control unit and check that the boiler starts the heating mode.
- Open a hot water tap and check that the boiler starts the DHW mode.
- Set the maximum CH flow temperature dial (fig. 135, **item 1**) and the DHW temperature dial (fig. 135, **item 2**) to the required temperatures.

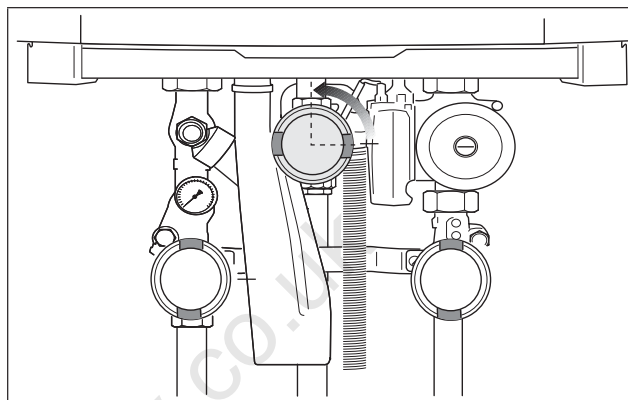


fig. 133 Opening the gas valve

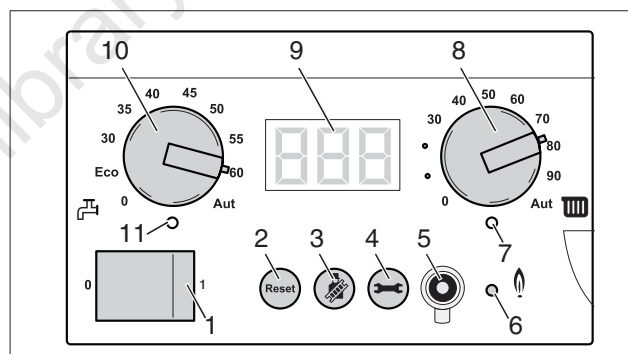


fig. 134 BC10 basic controller

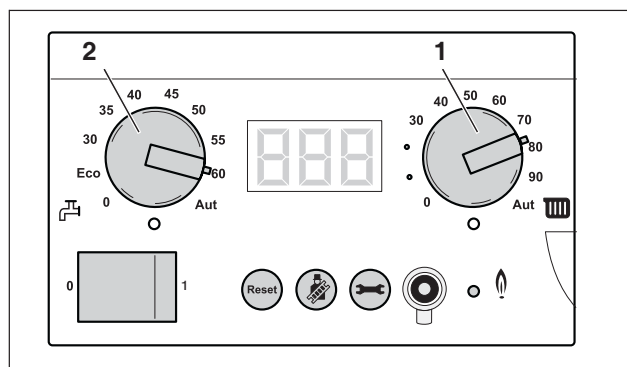


fig. 135 BC10

12.5 Service record log book

Complete the log book while carrying out needs-oriented maintenance.

- Enter your signature and the date after completing the maintenance activities.

Needs-oriented maintenance activities	Page	Date:	Date:	Date:	Date:	Date:	Date:	Date:
1. Cleaning the burner, heat exchanger and condensate trap after shutting down the heating system.	83	☐	☐	☐	☐	☐	☐	☐
2. Checking and adjusting the gas/air ratio	65	_____ Pa	_____ Pa	_____ Pa	_____ Pa	_____ Pa	_____ Pa	_____ Pa
– CO ₂ content at full load		_____ %	_____ %	_____ %	_____ %	_____ %	_____ %	_____ %
– CO ₂ content at part load		_____ %	_____ %	_____ %	_____ %	_____ %	_____ %	_____ %
3. Function testing.	90	☐	☐	☐	☐	☐	☐	☐
4. Confirming proper maintenance.								
		Company stamp/ signature	Company stamp/ signature	Company stamp/ signature	Company stamp/ signature	Company stamp/ signature	Company stamp/ signature	Company stamp/ signature

13 Display information

This section describes how to read operating and fault messages from the Logamatic BC10 basic controller and what they mean.



NOTE

For exact troubleshooting instructions please refer to the boiler service instructions.

You may also contact your Buderus branch or the Buderus service engineer in charge.

13.1 Removing the control panel from the boiler

To make it easier to use the buttons on the control panel when the boiler door is open and to make it easier to read out the values in the display, you can disassemble the control panel from the boiler door and hang it from the boiler frame.

- Open the boiler door (see fig. 37 "Opening the boiler door", page 38).
- Undo the 2 screws of the control panel at the back of the boiler door (fig. 136, **item 1**).
- Undo the cable tie (fig. 137, **item 1**).
- Remove the control panel (fig. 137).

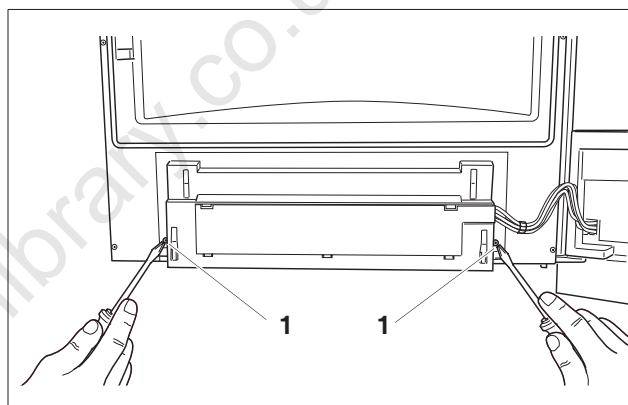


fig. 136 Undoing the screws

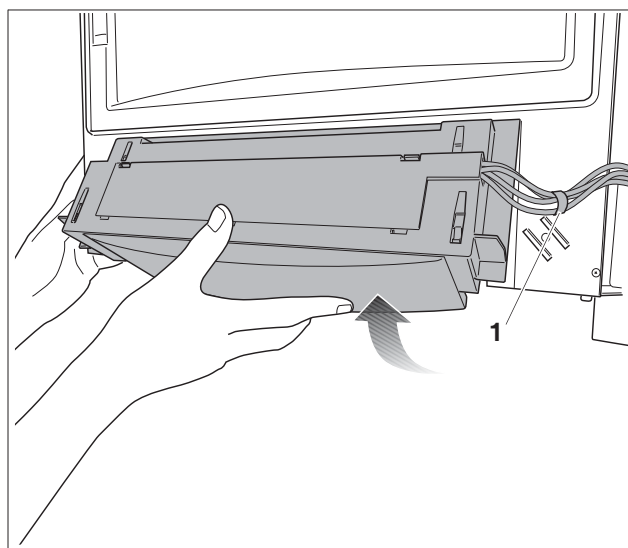


fig. 137 Removing the control panel

Item 1: Cable tie

- Use the two hooks to hang the control panel from the boiler (fig. 138).

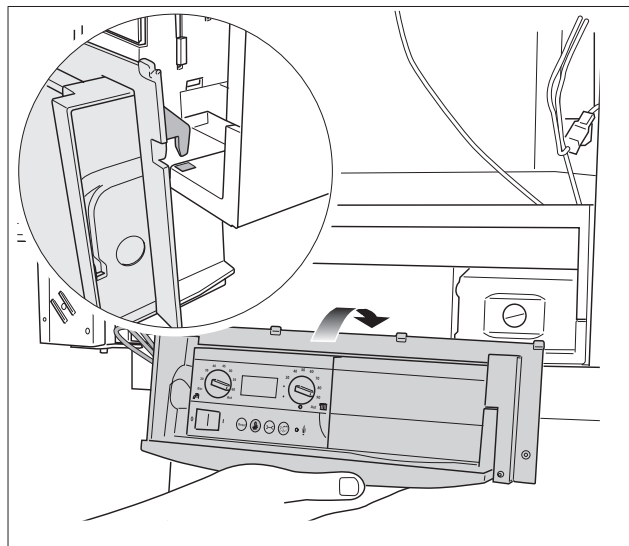


fig. 138 Hanging the control panel from the boiler frame

13.2 BC10 Display readings

Display readings			
Display reading	Key to display reading	Unit	Range
L 24	Current CH flow temperature.	°C	L 0 – L 130
P 1.6	Current system pressure.	bar	P 00 – P 40

Tab. 18 BC10 Display readings

13.3 BC10 Display settings

Display settings				
Display setting	Meaning of display setting	Unit	Range	Factory-adjusted setting
L 99	Configured target load (100 kW).	%	L 20 – L 99 / L -- 100 %	L --
L 99	Configured target load (80 kW).	%	L 25 – L 99 / L -- 100 %	L --
F 5	Configured target value of the pump run-over time. Note: Do not set a pump run-over time of less than F 5 (= 5 minutes).	min.	F 00 – F 60 / F 1d 24 h	F 5
E 1	DHW supply operating condition setting. Please note: If the setting E 0 is displayed, the frost protection of the DHW supply has also been switched off.	not applicable	E 0 "Off" / E 1 "On"	E 1

Tab. 19 BC10 Display settings

13.4 BC10 Display codes

Display codes								
Display code						LED on UBA 3	Other effects	
	Main display code		Sub-display code		Key to display code			Reset required?
					Operating phase: Communication test while starting up. This display code flashes five times within 5 seconds while starting up to indicate that the communication between the UBA 3 and the BC10 basic controller is being tested. If a new UBA 3 or a new KIM was fitted, this code will flash for max. 10 seconds.		Off or flashing at 8 Hz	
					Fault: If this code continues to flash on the display, there is a fault in the communication between the UBA 3 and the BC10 basic controller.		Off or flashing at 8 Hz	No heating operation and no DHW.
	 2)		 1)		Operating phase: The boiler is in flue gas test or service mode.		Off	
	 - H		 1)		Operating phase: The boiler is in heating mode.		Off	
	 - H 		 1)		Operating phase: The boiler is in manual operation mode.		Off	The room temperature is too high.
	 - H		 1)		Operating phase: The boiler is in DHW mode.		Off	
	 - H		 1)		Operating phase: Pump run-over time via the external hot water cylinder 130 seconds at minimum speed. The "Burner" (On/Off) LED is off.		Off	
	 0A		 1)		Operating phase: The switch optimisation program is activated. This program is activated if there has been a DHW request from an RC regulator more frequently than once every 10 minutes. This means that the boiler cannot be restarted until at least ten minutes have elapsed since initial burner start-up.		Off	The room temperature is not possibly reached.
	 0A		 1)		Operating phase: The boiler cannot start up temporarily after a DHW request has ended.		Off	
	 0C		 1)		Pre-operative phase: The boiler prepares for a burner start-up whenever a heat demand or a DHW request arises.		Off	

Tab. 20 BC10 Display codes

- 1) Only visible on the Service Tool or a specific RC regulator.
- 2) Or any indication with a permanent dot in the bottom right-hand corner.
- 3) Any indication with a flashing dot in the bottom right-hand corner.
- 4) The cause of this fault must be corrected first.
- 5) This fault code may deactivate again automatically after a specific time (without reset). Heating and DHW are now available once more.
- 6) The display values, e.g. the system pressure, are also shown as flashing codes.
- 7) If more faults occur simultaneously, the relevant fault codes are shown after another.
If one of these fault codes is a flashing fault code, the other fault codes will also flash.
- 8) In the event of this fault, the circulation pump is started up and remains in continuous operation in order to minimise the possibility of the heating system freezing up.
- 9)  + random digit or letter.

Display codes							
Display code						LED on UBA 3	Other effects
	Main display code		Sub-display code		Key to display code	Reset required?	
	0E		265 1)		Readiness for operation: The boiler is in standby mode. There is a current heat demand, but too much energy has been supplied.		Off
	0H		203 1)		Readiness for operation: The boiler is in standby mode. There is no current heat demand.		Off
	0L		284 1)		Ignition phase: The gas valve is activated.		Off
	0U		270 1)		Start-up phase: The boiler starts up after activation of the mains power supply or completion of a system reset. This code is displayed for a maximum of 4 minutes.		Off
	0Y		204 1)		Operating phase: The flow temperature sensor has detected that the current flow temperature is higher than the flow temperature setting on the BC10, or that it is higher than the flow temperature calculated according to the heating curve, or that it is higher than the flow temperature calculated for the DHW mode.		Off The room temperature is not possibly reached.
	0Y		276		Fault: The flow temperature sensor has measured a current flow temperature higher than 95 °C.	No 5) 7)	Off The room temperature is not possibly reached..
	0Y		277		Fault: The safety temperature sensor has measured a current flow temperature higher than 95 °C.	No 5) 7)	Off The room temperature is not possibly reached.
	0Y		285		Fault: The return temperature sensor has measured a current return temperature higher than 95 °C.	No 5) 7)	Off The room temperature is not possibly reached.
	1L		211		Fault: There is no connection between contacts 78 and 50 of the UBA 3 installation base.	No	Off No heating operation and no DHW.
	2E		207		Fault: The system pressure is too low (less than 0.2 bar).	No	Off No heating operation and no DHW.
	2F		260		Fault: The flow temperature sensor has not, after burner start-up, detected any temperature increase in the heating system water.	No	Off

Tab. 20 BC10 Display codes

- 1) Only visible on the Service Tool or a specific RC regulator.
- 2) Or any indication with a permanent dot in the bottom right-hand corner.
- 3) Any indication with a flashing dot in the bottom right-hand corner.
- 4) The cause of this fault must be corrected first.
- 5) This fault code may deactivate again automatically after a specific time (without reset). Heating and DHW are now available once more.
- 6) The display values, e.g. the system pressure, are also shown as flashing codes.
- 7) If more faults occur simultaneously, the relevant fault codes are shown after another.
If one of these fault codes is a flashing fault code, the other fault codes will also flash.
- 8) In the event of this fault, the circulation pump is started up and remains in continuous operation in order to minimise the possibility of the heating system freezing up.
- 9)  + random digit or letter.

Display codes							
Display code						LED on UBA 3	Other effects
	Main display code		Sub-display code		Key to display code	Reset required?	
	2F		271		Fault: The heating water temperature difference, measured between the flow temperature sensor and the safety temperature sensor, is too high.		
					Fault: The pressure sensor failed to measure a pressure increase on the heating side during any of four attempts.	Yes 4) 6) 7) 8)	flashing 1 Hz No heating operation and no DHW.
	2P		212		Fault: The flow temperature sensor has measured a heating water temperature increase of over 5 °C/s.	No 5) 7)	Off
	2U		213		Fault: The temperature difference measured between the flow temperature sensor and the return temperature sensor, is more than 50 °C.	No 5) 7)	Off
	2Y		281		Fault: The pump has stopped or is running without water.	No	Off
	2Y		282		Fault: No feedback from the pump.	No	Off
	3A		264		Fault: The tachometer signal from the fan has failed during the operating phase.	No 5) 7)	Off
	3C				Fault: No current of air after a certain time.	Yes 4) 6) 7) 8)	flashing 1 Hz No heating operation and no DHW.
	3F		273		Operating phase: The appliance has been switched off for a couple of seconds, because it had been running without any interruption for 24 hours. This is a safety check.	No 5) 7)	Off
					Fault: The tachometer signal from the fan is not present during the pre-operative or operating phase.	Yes 4) 6) 7) 8)	flashing 1 Hz No heating operation and no DHW.
					Fault: The fan is running too slowly.	Yes 4) 6) 7) 8)	flashing 1 Hz No heating operation and no DHW.
					Fault: The fan is running too fast.	Yes 4) 6) 7) 8)	flashing 1 Hz No heating operation and no DHW.
					Fault: The flow temperature sensor has detected a flow temperature of over 105 °C.	Yes 4) 6) 7) 8)	flashing 1 Hz No heating operation and no DHW.

Tab. 20 BC10 Display codes

- 1) Only visible on the Service Tool or a specific RC regulator.
- 2) Or any indication with a permanent dot in the bottom right-hand corner.
- 3) Any indication with a flashing dot in the bottom right-hand corner.
- 4) The cause of this fault must be corrected first.
- 5) This fault code may deactivate again automatically after a specific time (without reset). Heating and DHW are now available once more.
- 6) The display values, e.g. the system pressure, are also shown as flashing codes.
- 7) If more faults occur simultaneously, the relevant fault codes are shown after another.
If one of these fault codes is a flashing fault code, the other fault codes will also flash.
- 8) In the event of this fault, the circulation pump is started up and remains in continuous operation in order to minimise the possibility of the heating system freezing up.
- 9)  + random digit or letter.

Display codes							
Display code						LED on UBA 3	Other effects
	Main display code		Sub-display code		Key to display code	Reset required?	
					Fault: There is no bridging cable between contacts 22 and 24 of the UBA 3 contact strip.	Yes 4) 6) 7) 8)	flashing 1 Hz No heating operation and no DHW.
					Fault: The sensor test has failed.	Yes 4) 6) 7) 8)	flashing 1 Hz No heating operation and no DHW.
					Fault: The safety temperature sensor has detected a flow temperature of over 105 °C.	Yes 4) 6) 7) 8)	flashing 1 Hz No heating operation and no DHW.
					Fault: The contacts for the safety temperature sensor have shorted or the safety temperature sensor has detected a flow temperature of over 130 °C.	Yes 4) 6) 7) 8)	flashing 1 Hz No heating operation and no DHW.
					Fault: The contacts for the safety temperature sensor have been interrupted.	Yes 4) 6) 7) 8)	flashing 1 Hz No heating operation and no DHW.
					Fault: The contacts for the safety temperature sensor have shorted.	Yes 4) 6) 7) 8)	flashing 1 Hz No heating operation and no DHW.
					Fault: The contacts for the safety temperature sensor have been interrupted.	Yes 4) 6) 7) 8)	flashing 1 Hz No heating operation and no DHW.
					Operating phase: Component test phase.	No	Off
					Fault: The system has detected an insufficient ionisation current during the ignition phase.	No 5) 7)	Off
					Fault: The system has detected an insufficient ionisation current after four start-up attempts.	Yes 4) 6) 7) 8)	flashing 1 Hz No heating operation and no DHW.
					Fault: The system has detected an ionisation current before burner start-up.	Yes 4) 6) 7) 8)	flashing 1 Hz No heating operation and no DHW.
					Fault: An ionisation current has been measured after the burner shut down.	Yes 4) 6) 7) 8)	flashing 1 Hz No heating operation and no DHW.
					Fault: The system has detected an insufficient ionisation current during the operating phase.	No 5) 7)	Off

Tab. 20 BC10 Display codes

- 1) Only visible on the Service Tool or a specific RC regulator.
- 2) Or any indication with a permanent dot in the bottom right-hand corner.
- 3) Any indication with a flashing dot in the bottom right-hand corner.
- 4) The cause of this fault must be corrected first.
- 5) This fault code may deactivate again automatically after a specific time (without reset). Heating and DHW are now available once more.
- 6) The display values, e.g. the system pressure, are also shown as flashing codes.
- 7) If more faults occur simultaneously, the relevant fault codes are shown after another.
If one of these fault codes is a flashing fault code, the other fault codes will also flash.
- 8) In the event of this fault, the circulation pump is started up and remains in continuous operation in order to minimise the possibility of the heating system freezing up.
- 9)  + random digit or letter.

Display codes							
Display code						LED on UBA 3	Other effects
	Main display code		Sub-display code		Key to display code	Reset required?	
					Fault: The glow ignitor was activated for more than 10 minutes.	Yes 4) 6) 7) 8)	flashing 1 Hz No heating operation and no DHW.
					Fault: The ionisation current is too high.	Yes	flashing 1 Hz No heating operation and no DHW.
					Fault: The power supply was interrupted during a locking fault        	Yes 4) 6) 7) 8)	flashing 1 Hz No heating operation and no DHW.
					Fault: The UBA 3 is defect.	Yes 4) 6) 7) 8)	flashing 1 Hz No heating operation and no DHW.
					Fault: The UBA 3 is defect.	Yes 4) 6) 7) 8)	flashing 1 Hz
			 1)		Operating phase: The external switch contact is open.		Off No heating operation.
					Start-up phase: The boiler starts up after activation of the mains power supply or completion of a system reset. This code is displayed for a maximum of 4 minutes.		On
					Fault: The UBA 3 or the KIM is defective.	Yes	flashing 1 Hz No heating operation and no DHW.
					Fault: The UBA 3 or the KIM is defective.	Yes	flashing 1 Hz No heating operation and no DHW.
					Fault: The UBA 3 or the KIM is defective.	Yes	flashing 1 Hz No heating operation and no DHW.
					Fault: The UBA 3 or the KIM is defective.	Yes 4) 6) 7) 8)	flashing 1 Hz No heating operation and no DHW.
					Fault: The contacts for the gas valve have been broken.	Yes 4) 6) 7) 8)	flashing 1 Hz No heating operation and no DHW.
					Fault: The UBA 3 or the KIM is defective.	Yes 4) 6) 7) 8)	flashing 1 Hz
					Fault: The UBA 3 or the KIM is defective.	Yes 4) 6) 7) 8)	flashing 1 Hz No heating operation and no DHW.
					Fault: The UBA 3 or the KIM is defective.	Yes 4) 6) 7) 8)	flashing 1 Hz No heating operation and no DHW.

Tab. 20 BC10 Display codes

- 1) Only visible on the Service Tool or a specific RC regulator.
- 2) Or any indication with a permanent dot in the bottom right-hand corner.
- 3) Any indication with a flashing dot in the bottom right-hand corner.
- 4) The cause of this fault must be corrected first.
- 5) This fault code may deactivate again automatically after a specific time (without reset). Heating and DHW are now available once more.
- 6) The display values, e.g. the system pressure, are also shown as flashing codes.
- 7) If more faults occur simultaneously, the relevant fault codes are shown after another.
If one of these fault codes is a flashing fault code, the other fault codes will also flash.
- 8) In the event of this fault, the circulation pump is started up and remains in continuous operation in order to minimise the possibility of the heating system freezing up.
- 9)  + random digit or letter.

Display codes								
Display code						Reset required?	LED on UBA 3	Other effects
	Main display code		Sub-display code		Key to display code			
	A01		B00		Fault: The contacts to the outdoor-temperature sensor have shorted or are interrupted, the sensor has been connected incorrectly or is defective.	No	Off	Minimum outdoor temperature is assumed.
	A01		B08		Fault: The contacts to the DHW temperature sensor have shorted or are interrupted, the sensor has been connected incorrectly or is defective.	No	Off	No DHW is heated any more.
	A01		B09		Fault: The contacts to DHW temperature sensor 2 have shorted or are interrupted, the sensor has been connected incorrectly or is defective.	No	Off	No DHW is heated any more.
	A01		B10		Fault: The boiler water does not warm up. Sensor lead broken or shorted, sensor connected incorrectly or defective, filling pump connected incorrectly or defective.	No	Off	No DHW available, but there is heating operation. The DHW priority is cancelled when the fault message appears.
	A01		B11		Fault: Thermal disinfection has failed. Outlet flow during disinfection period too high, sensor lead broken or shorted, sensor connected incorrectly or defective, filling pump defective.	No	Off	Thermal disinfection was interrupted.
	A01		B16		Fault: No connection to EMS. EMS bus system is overloaded, UBA3/MC10 is defective.	No	Off	The boiler no longer receives a heat demand. The heating system does not heat any longer.
	A01		B28		Fault: Water pressure sensor generates a fault code. The digital water pressure sensor is defective.	No	Off	No heating operation and no DHW.
	A02		B16		Fault: No communication with BC10. Contact problem at BC10 or BC10 is defective.	No	Off	BC10 settings are no longer taken over by RCxx devices.
	A11		B02		Fault: Time not set. Failing time setting, e.g. due to a long power cut.	No	Off	Limited operation of all heating programs and fault list.
	A11		B03		Fault: Date not set. Failing date setting, e.g. due to a long power cut.	No	Off	Limited operation of all heating programs, holiday function, fault list.

Tab. 20 BC10 Display codes

- 1) Only visible on the Service Tool or a specific RC regulator.
- 2) Or any indication with a permanent dot in the bottom right-hand corner.
- 3) Any indication with a flashing dot in the bottom right-hand corner.
- 4) The cause of this fault must be corrected first.
- 5) This fault code may deactivate again automatically after a specific time (without reset). Heating and DHW are now available once more.
- 6) The display values, e.g. the system pressure, are also shown as flashing codes.
- 7) If more faults occur simultaneously, the relevant fault codes are shown after another.
If one of these fault codes is a flashing fault code, the other fault codes will also flash.
- 8) In the event of this fault, the circulation pump is started up and remains in continuous operation in order to minimise the possibility of the heating system freezing up.
- 9)  + random digit or letter.

Display codes								
Display code							LED on UBA 3	Other effects
	Main display code		Sub-display code		Key to display code	Reset required?		
					Fault: RC30-HK1 remote control. No remote control assigned, although room temperature control has been set.	No	Off	Since there is no actual room temperature information, room influence and optimization of the switch times do not work. The EMS works on the basis of the values last set on the remote control.
					Fault: RC30-HK2 remote control. No remote control assigned, although room temperature control has been set.			
					Fault: RC30-HK1 remote control. No remote control assigned, although frost protection type "FROST" has been set.	No	Off	Since there is no actual room temperature information, room influence and optimization of the switch times do not work. The EMS works on the basis of the values last set on the remote control.
					Fault: RC30-HK2 remote control. No remote control assigned, although frost protection type "FROST" has been set.			
					Fault: RC30-HK1 temperature sensor. The external temperature sensor of the remote control (control unit) of heating circuit 1 is defective.	No	Off	Since there is no actual room temperature information, room influence and optimization of the switch times do not work. The EMS works on the basis of the values last set on the remote control.
					Fault: RC30-HK2 temperature sensor. The external temperature sensor of the remote control (control unit) of the heating circuit is defective.			
					Fault: The contacts to the switch sensor have shorted or are interrupted, the sensor has been connected incorrectly or is defective.	No	Off	The water supply to the downstream heating circuits may be faulty now they can no longer be provided with the required heat capacity.
					Fault: WM10 not available or no communication. WM10 or bus circuit connected incorrectly or defective, WM10 is not recognized by the RC30.	No	Off	Heating circuit pump 1 is activated continuously.

Tab. 20 BC10 Display codes

- 1) Only visible on the Service Tool or a specific RC regulator.
- 2) Or any indication with a permanent dot in the bottom right-hand corner.
- 3) Any indication with a flashing dot in the bottom right-hand corner.
- 4) The cause of this fault must be corrected first.
- 5) This fault code may deactivate again automatically after a specific time (without reset). Heating and DHW are now available once more.
- 6) The display values, e.g. the system pressure, are also shown as flashing codes.
- 7) If more faults occur simultaneously, the relevant fault codes are shown after another.
If one of these fault codes is a flashing fault code, the other fault codes will also flash.
- 8) In the event of this fault, the circulation pump is started up and remains in continuous operation in order to minimise the possibility of the heating system freezing up.
- 9)  + random digit or letter.

Display codes								
Display code						Reset required?	LED on UBA 3	Other effects
	Main display code		Sub-display code		Key to display code			
	A 18		B 25		Fault: Conflicting addresses. Both RC20 and RC30 are registered as Master.	No	Off	Both RC30 and RC20 activate heating circuit 1 and DHW. Depending on the heating programs set and the required room temperatures, the heating system can no longer work correctly. DHW mode does not work well.
	A 21		B 06		Fault: RC20-HK1 temperature sensor. The integrated temperature sensor of the remote control (control unit) of heating circuit 1 is defective.	No	Off	Since there is no actual room temperature information, room influence and optimization of the switch times do not work. The EMS works on the basis of the values last set on the remote control.
	A 21		B 16		Fault: RC20-HK1 communication. RC20 addressed incorrectly, wired incorrectly or defective.	No	Off	Since there is no actual room temperature information, room influence and optimization of the switch times do not work.
	A 22		B 06		Fault: RC20-HK2 temperature sensor. The integrated temperature sensor of the remote control (control unit) of heating circuit 2 is defective.	No	Off	Since there is no actual room temperature information, room influence and optimization of the switch times do not work. The EMS works on the basis of the values last set on the remote control.

Tab. 20 BC10 Display codes

- 1) Only visible on the Service Tool or a specific RC regulator.
- 2) Or any indication with a permanent dot in the bottom right-hand corner.
- 3) Any indication with a flashing dot in the bottom right-hand corner.
- 4) The cause of this fault must be corrected first.
- 5) This fault code may deactivate again automatically after a specific time (without reset). Heating and DHW are now available once more.
- 6) The display values, e.g. the system pressure, are also shown as flashing codes.
- 7) If more faults occur simultaneously, the relevant fault codes are shown after another.
If one of these fault codes is a flashing fault code, the other fault codes will also flash.
- 8) In the event of this fault, the circulation pump is started up and remains in continuous operation in order to minimise the possibility of the heating system freezing up.
- 9)  + random digit or letter.

Display codes								
Display code							LED on UBA 3	Other effects
	Main display code		Sub-display code		Key to display code	Reset required?		
					Fault: RC20-HK2 communication. RC20 addressed incorrectly, wired incorrectly or defective.	No	Off	Since there is no actual room temperature information, room influence and optimization of the switch times do not work.
					Fault: The contacts to the heating circuit flow sensor have shorted or are interrupted, the sensor has been connected incorrectly or is defective.	No	Off	Heating circuit pump 2 is activated depending on the preset value. The power to the mixer is switched off and the mixer stays in the state it was last put in (can be adjusted manually).
					Fault: MM10 not available or no communication. The heating circuit addresses on the MM10 and the RC30 do not match up, the MM10 or the bus circuit is connected incorrectly or is defective, MM10 is not recognized by the RC30.	No	Off	Heating circuit 2 cannot be operated correctly. MM10 and the mixer automatically goes into emergency operation. Heating circuit pump 2 is activated continuously. Monitor data in the RC30 is invalid.
					Fault: The return temperature sensor has measured a return temperature higher than 105 °C.	Yes 4) 6) 7) 8)	flashing 1 Hz	No heating operation and no DHW.
					Fault: The contacts for the pressure sensor have been interrupted or have shorted.	Yes 4) 6) 7) 8)	flashing 1 Hz	No heating operation and no DHW.
					Fault: The contacts for the pressure sensor have shorted.	Yes 4) 6) 7) 8)	flashing 1 Hz	No heating operation and no DHW.
					Fault: The contacts for the return temperature sensor have shorted.	Yes 4) 6) 7) 8)	flashing 1 Hz	No heating operation and no DHW.
					Fault: The contacts for the return temperature sensor have been interrupted.	Yes 4) 6) 7) 8)	flashing 1 Hz	No heating operation and no DHW.

Tab. 20 BC10 Display codes

- 1) Only visible on the Service Tool or a specific RC regulator.
- 2) Or any indication with a permanent dot in the bottom right-hand corner.
- 3) Any indication with a flashing dot in the bottom right-hand corner.
- 4) The cause of this fault must be corrected first.
- 5) This fault code may deactivate again automatically after a specific time (without reset). Heating and DHW are now available once more.
- 6) The display values, e.g. the system pressure, are also shown as flashing codes.
- 7) If more faults occur simultaneously, the relevant fault codes are shown after another.
If one of these fault codes is a flashing fault code, the other fault codes will also flash.
- 8) In the event of this fault, the circulation pump is started up and remains in continuous operation in order to minimise the possibility of the heating system freezing up.
- 9)  + random digit or letter.

Display codes							
Display code						LED on UBA 3	Other effects
	Main display code		Sub-display code		Key to display code	Reset required?	
	EL		290		Fault: The UBA 3 or the KIM is defective.	No 5) 7)	Off No heating operation and no DHW.
			 till 		Fault: The UBA 3 or the KIM is defective.	Yes 4) 6) 7) 8) 9)	flashing 1 Hz No heating operation and no DHW.
					Operating phase: The system pressure is too low (less than 1.0 bar).	No	Off Possibly no heating operation or no DHW available.
	H 7				Operating phase: The system pressure is too low (less than 1.0 bar).	No	Off Possibly no heating operation or no DHW available.
	P _ _				Operating phase: The system pressure is too high (higher than 4.0 bar).	No	Off
	rE				Fault: Reset is carried out. This code appears after the "Reset" button on the display was pressed for 5 seconds.		Off

Tab. 20 BC10 Display codes

- 1) Only visible on the Service Tool or a specific RC regulator.
- 2) Or any indication with a permanent dot in the bottom right-hand corner.
- 3) Any indication with a flashing dot in the bottom right-hand corner.
- 4) The cause of this fault must be corrected first.
- 5) This fault code may deactivate again automatically after a specific time (without reset). Heating and DHW are now available once more.
- 6) The display values, e.g. the system pressure, are also shown as flashing codes.
- 7) If more faults occur simultaneously, the relevant fault codes are shown after another.
If one of these fault codes is a flashing fault code, the other fault codes will also flash.
- 8) In the event of this fault, the circulation pump is started up and remains in continuous operation in order to minimise the possibility of the heating system freezing up.
- 9)  + random digit or letter.

13.5 Re-fit the control panel in the boiler

- Take the control panel from the boiler frame.
- Attach the control panel to the boiler door again by following the above procedure in reverse order and secure it with 2 screws.

14 Technical specifications

The technical specifications serve to provide information about the boiler performance profile.

		Logamax plus	
	Unit	GB162-80	GB162-100
Rated thermal load for G20	kW	19.3 - 82.0	19.3 – 96.5
Rated heating capacity, heating curve (80/60 °C)	kW	18.9 - 80.0	19.0 - 94.5
Rated heating capacity, heating curve 50/30 °C	kW	20.8 - 84.5	20.5 - 99.5
Boiler efficiency at max. capacity, heating curve 80/60 °C	%	97	98
Boiler efficiency at max. capacity, heating curve 50/30 °C	%	107	107
Rated efficiency, heating curve 75/60 °C	%	107	107
Rated efficiency, heating curve 50/30 °C	%	110	110
Standby heat loss	%	0.05	0.06
Hot-water circuit			
Minimum water circulation volume	l/h	0	0
CH (boiler) flow temperature	°C	30 – 90, can be set on the Logamatic BC10 basic controller	30 – 90, can be set on the Logamatic BC10 basic controller
Resistance at ΔT ₂₀	mb	225	315
max. boiler working pressure	bar	4	4
Content of heating circuit heat exchanger	l	5	5
Pipe connections			
Gas connection	Inch	Rp1“	
Heating water connection	Inch	G1½” union nut with female thread enclosed	
Condensate water connection	mm	Ø 24	
Flue gas values			
Condensate water quantity for natural gas G20, 0/30 °C	l/h	9.0	10.8
pH value of condensate water	pH	approx. 4.1	approx. 4.1
Flue gas mass flow rate, full load	g/s	35.3	44.9
Flue gas temperature 80/60 °C, full load	°C	67	76
Flue gas temperature 80/60 °C, part load	°C	61	57
Flue gas temperature 50/30 °C, full load	°C	48	51
Flue gas temperature 50/30 °C, part load	°C	34	34
CO ₂ content at full load, natural gas G20	%	9.3	9.4
Free fan feed pressure	Pa	139	220
Flue gas connection			
Flue gas value group for air intake/flue gas system		II ₆ (G61)	
Ø flue gas system, room-air dependent	mm	Ø100	
Ø flue gas system, room-air independent	mm	standard Ø100/150 concentric	
Electrical data			
Mains connection voltage	V	230	
Electrical protection rating		IPX4D	
Electrical power consumption, full load (without a pump group)	W	97	147

Tab. 21 Technical specifications of Logamax plus GB162-80/100

		Logamax plus	
	Unit	GB162-80	GB162-100
Electrical power consumption, partial load (without a pump group)	W	30	28
Boiler dimensions and weight			
Height × width × depth (with pump group)	mm	1300×520×465	
Weight (without a pump group)	kg	70	
Other specifications			
Gas injector diameter G20	mm	8.4	8.4

Tab. 21 Technical specifications of Logamax plus GB162-80/100

Operating conditions for time constants

Pump group		Logamax plus	
		GB162-80	GB162-100
General			
Boiler height including pump group	mm	1 300	
Boiler width including pump group	mm	520	
Boiler depth including pump group	mm	465	
Pump group components		Casing, gas isolating valve, pressure relief valve, stop valves, check valves, drain cock, pressure gauge, pump.	
Pump type			
UPS 25-80 pump group		UPS 25-80	

Tab. 22 Pump group

Operating conditions and time constants		Logamax plus GB162-80/100	
Maximum flow temperature	°C	90	
Maximum working pressure (boiler)	bar	4	
Current rating		230 VAC, 50 Hz,  10A, IP X4D	

Tab. 23 Operating conditions and time constants

Fuels and configurations

Fuels and configurations	Logamax plus GB162-80/100	
Logamax plus GB162-80/100	Natural gas H (G20)	
Version	B ₂₃ , C ₁₃ , C ₃₃ , C ₄₃ , C ₅₃ , C ₆₃ , C ₈₃ depending on room air and independent of room air (Compliance with increased tightness requirements with operation independent of room air).	
Gas category according to EN 437	GB/IE I _{2H} 20 mbar	

Tab. 24 Fuels and configuration

Hydraulic resistance of the boiler

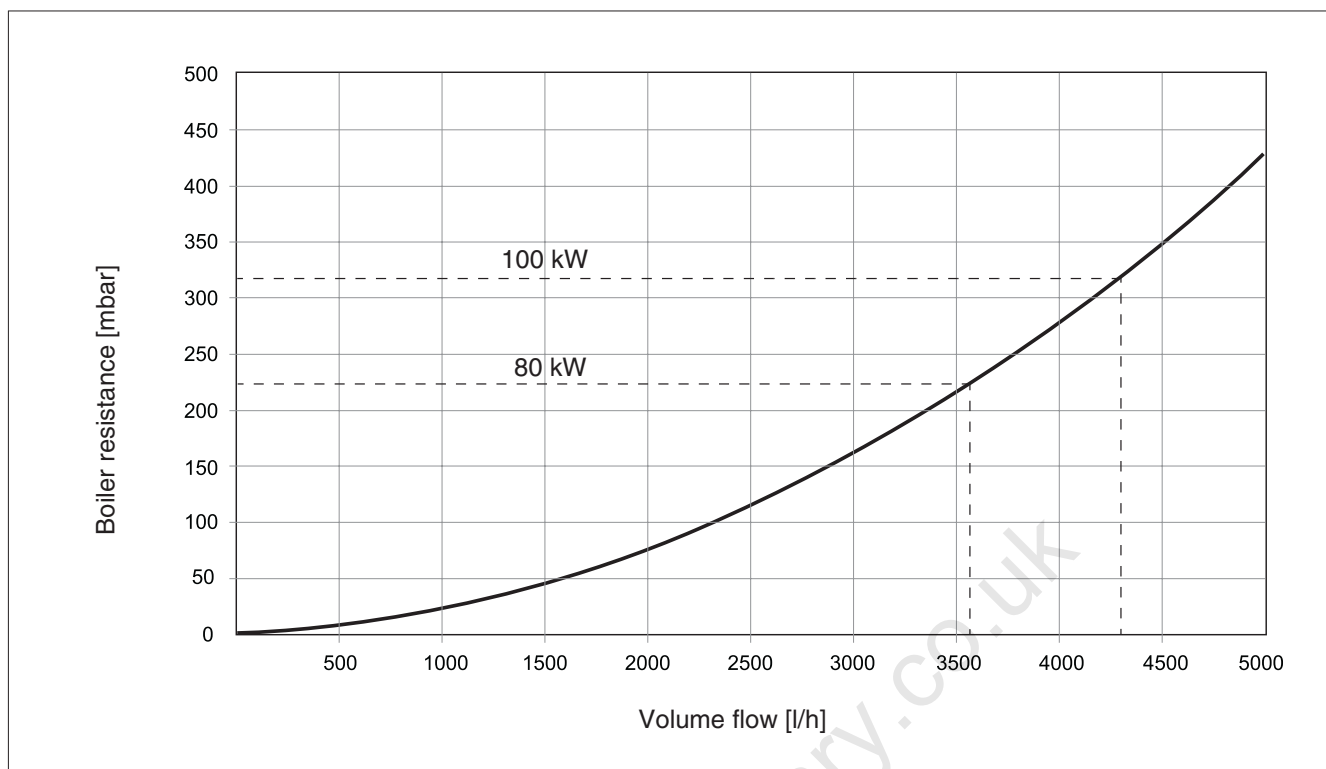


fig. 139 Boiler resistance curve

14.1 Spare parts list

The following are parts commonly required due to damage or replacements. Their failure will affect safety or performance of this appliance. For a pictorial representation of the part see the respective position number on the exploded view pictures on page 108 and 109.

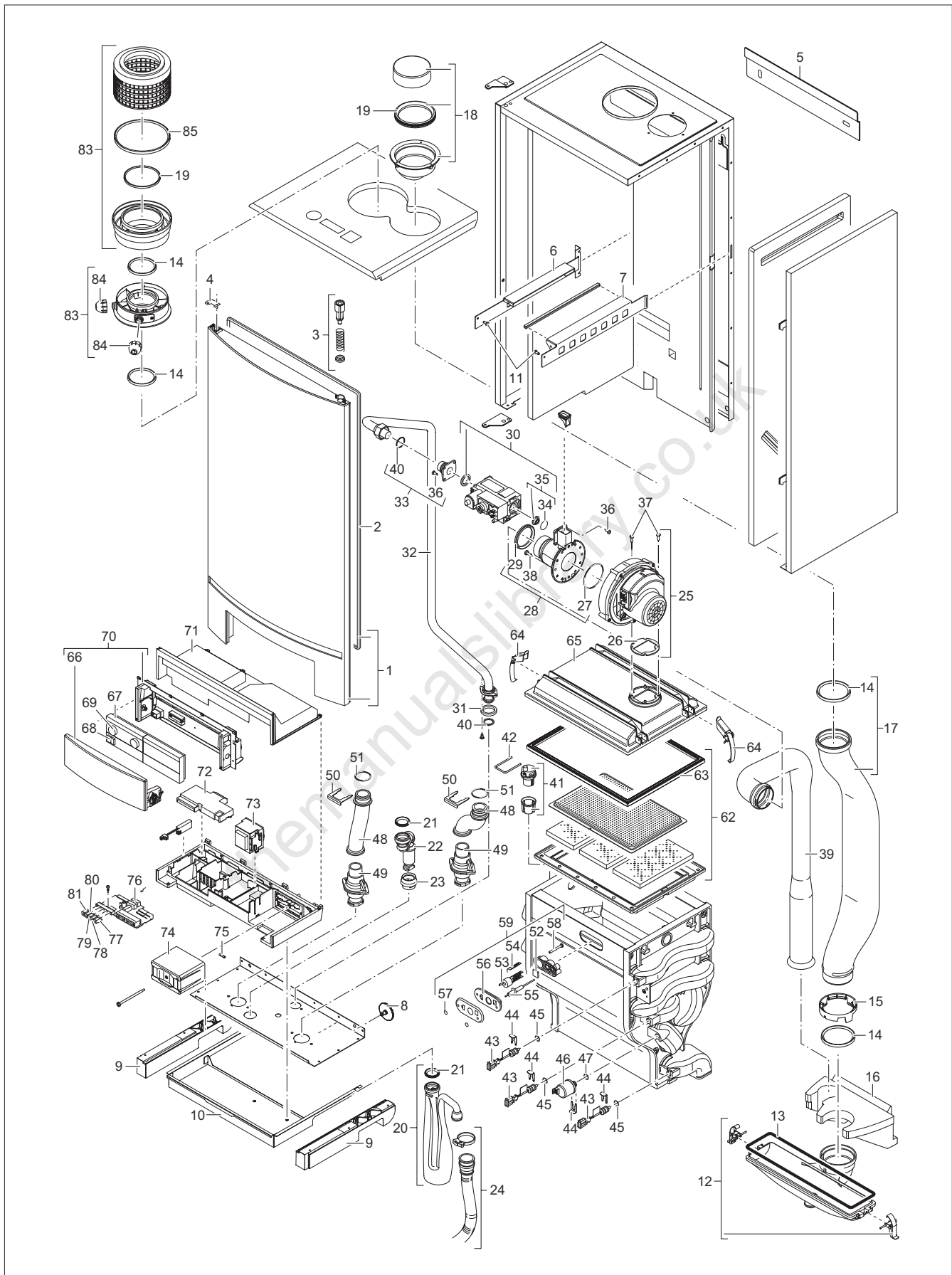
	Description	Product No.
1	Door	7101380
2	Sealing door	73912
3	Door lock	73911
4	Hinge door	73990
5	Wall mounting bracket	73965
6	Bracket left	73962
7	Bracket right	73963
8	Adjusting foot	73949
9	Transport slide (L + R)	73951
10	Drawer modules	73964
11	Screw 4.2 x 8.5 x (10 pc)	73988
12	Condensate collector	73930
13	Seal condensate collector	73929
14	Seal 80 mm	73931
15	Upper side condensate collectors	73934
16	Mounting flue-gas pipe	73907

	Description	Product No.
17	Exhaust pipe	73935
18	Adapter air inlet	73938
19	Seal 100 mm	73939
20	Condensate collector	73933
21	Seal condensate collector	73463
22	Drain pipe	73932
23	Seal bush (white)	73449
24	Condensate drain pipe	73995
25	Fan – 100 kW	73922
26	Seal Fan	73920
27	O-ring 70 x 3 (2 pc)	73983
28	Venturi	73978
29	Seal Ø 60 mm	73563
30	Gas valve	73923
31	Seal 33 x 24 x 3.5 (10 pc)	73368s
32	Gas pipe – 100 kW	73975

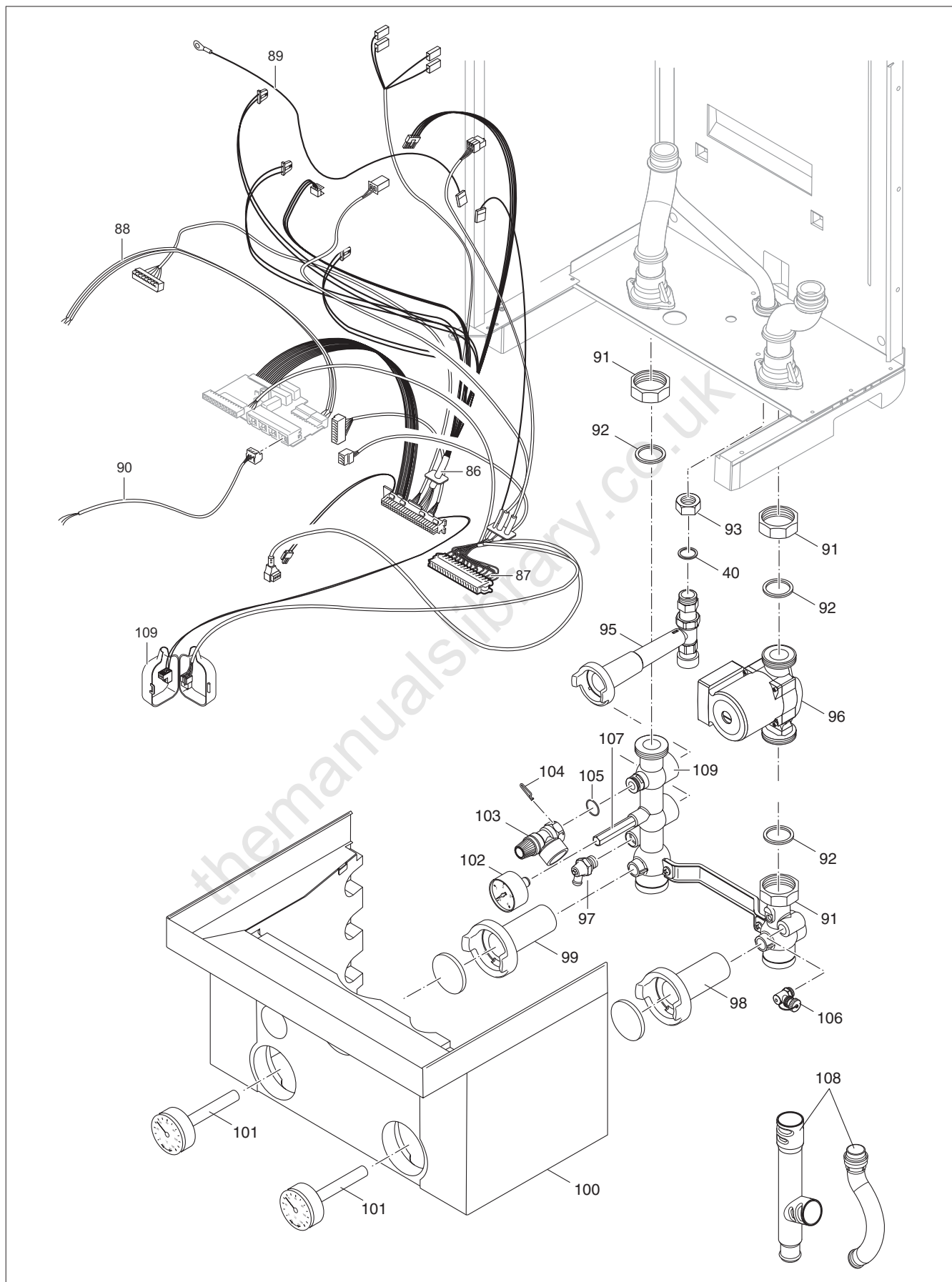
	Description	Product No.
33	Flange Gas valve	73987
34	O-ring (10 pc)	73982
35	Orifice 100 kW	73980
36	Screw M5 x 20 (10 pc)	73572s
37	Screw M5 x 16 (10 pc)	73970
38	Screw M6 x 16 (10 pc)	73971
39	Air inlet pipe – 100 kW	73926
40	Sealing (10 pc)	73969
41	Air vent revision set	73916
42	Clip	73973
43	Sensor NTC	78159
44	Clip (3 x 2 pc)	78156s
45	O-ring 9.19 x 2.62 (10 pc)	78175s
46	Pressure sensor	73915
47	O-ring 14 x 1.78 (10 pc)	73679s
48	Return/Supply pipe	73950
49	Connection nipple CH	73080
50	Clip	73974
51	O-ring (10 pc)	73972
52	Sight glas	73914
53	Glow ignitor	38319
54	Shield glow ignitor	38453
55	Ionisation electrode	38320
56	Seal sight glas (2 pc)	73928
57	Nut M5 (10 pc)	78231s
58	Crosshead screw M5 x 45 (5 pc)	79070s
59	Mounting set incl. sightglas	73989
60	Heat exchanger	73913
61	Cover controller BC10	73698
62	Burner	73917
63	Seal Burner	73918
64	Clamp (2 pc)	73921
65	Burner box	73919
66	Front connection board	73910
67	Controller connection plate	73692
68	On/Off switch	73660
69	Knob BC10	38724
70	Draw connection board	73909
71	Cover control box	73977
71	Cover connection board 230V	73815
72	Transformer	73697
73	UBA 3	18196
74	Burner box	73919

	Description	Product No.
75	Fuse 5AF (10 pc)	73904s
76	Connection board	73814
77	Electronic connection red	73776
78	Electronic connection grey	73774
79	Electronic connection green	73773
80	Electronic connection blue	73775
81	Electronic connection orange	73777
82	Flue gas exhaust connection	73940
83	Flue gas adapter	73936
84	Measure nipple cap	73937
85	Sealing 150 mm	73968
86	Cable harness low voltage – 100 kW	73943
87	Cable harness high voltage	new
88	Cable harness on/off switch	73946
89	Cable harness earth	73947
90	Mains cable	73825
91	Union nut 1½" (5 pc)	73481s
92	Sealing (10 pc)	15022s
93	Nut 1"	73675
–		
95	Gas valve	73960
96	Pump UPS 25-80-130	73954
97	Air vent	73409
98		–
99		–
100	Casing	73961
101	Thermometer	73890
102	Manometer	73958
103	Safety valve 4 bar	73957
104	Clip (5 pc)	73651s
105	Seal (5 pc)	73638s
106	Drain cock	73959
107	Connection pressure gauge	73081
108	Drain pipe	73075
–	Flue-gas sensor – 100 kW	73996
–	Flue-gas sensor – 70 kW	73997
–	BCM 1026 – 100 kW	7101470
–	BCM 1027	7101468
–	Plug protector	73948
–	Screw 6.3 x 19 (10 pc)	73986

Exploded view Logamax plus GB162-80/100



Exploded view pump group Logamax plus GB162-80/100



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User Manual

Condensing gas boiler Logamax plus GB162-80/100



Please read thoroughly before operating the boiler

Preface

Dear customer,

This User Manual has been produced for use with the following wall-mounted condensing gas boilers:

- Logamax plus GB162-80
- Logamax plus GB162-100.

This User Manual offers the user of the heating system an overview of the use and operation of the boiler. The Quick Reference Manual is located in the boiler, inside the control panel door (see fig. 3 on page 8).

To ensure the safe, economic and environmentally-friendly use of the heating system we advise you to read and observe the safety instructions and the User Manual.

Important general instructions for use

This device should only be used for its intended purpose and in accordance with the regulations. It is a requirement and in your own interest, and that of safety, that this boiler must be installed by a CORGI registered installer, in accordance with the relevant requirements of the current Gas Safety (Installation and Use) Regulations, The Building Regulations, current I.E.E. Wiring Regulations and the relevant British Standard Codes of Practice.

Detailed recommendations are contained in the following British Standard Codes of Practice:

BS.1212

BS.6281: part 1

BS.6282: part 1

BS.6283: part 4

BS.4814: Pressure vessels

BS.5449: Forced circulation hot water systems

BS.5546: Installation of gas hot water supplies for domestic purpose (2nd. Family Gases)

BS.6880: Code of practice for low temperature hot water heating systems for output greater than 45 kW

BS.6891: Low pressure installation pipes

BS.6644: Specification for Installation of gas-fired hot water boilers of rated inputs between 70 kW (net) and 1.8 MW (net)

cp 342.2: centralised hot water supply (2nd and 3rd family gases)

CISBE: Guide Reference sections B7, B11 and B13

IGE/UP/2: Gas installation pipework and compressors on industrial and commercial premises

IGE/UP/10: Installation of gas appliances in industrial and commercial premises, part 1: flued appliances



NOTE:

Manufacturer's notes must not be taken in any way as overriding statutory obligations.

The device may only be used in combination with the units, accessories and spare parts listed in the installation and maintenance instructions. Other combinations of units, accessories and consumables are only to be used if they completely meet the specifications involved, and if system performance and safety are not affected in any way.

The boiler name is made up of the following elements:

Logamax plus: Type name

GB: Condensing gas boiler

162: Type

80 or 100: Heating range in kW

Buderus has a policy of constant product improvement, which may result in deviations in technical data. If you have any suggestions for improvements or have found any discrepancies, please do not hesitate to contact us.

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Document no.: 7217 5100 – 01/2006

The manufacturer of the boiler is not responsible for any damage due to failures to observe the instructions in this User Manual.

If you have any doubts or questions, please contact the installer or the service company.

Due to the high efficiency of the boiler a plume of water vapour may form at the terminal during operation. This is normal.

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1 Overview of Logamatic BC10 basic controller

Item	Description
1.	Mains switch (Heating On/Off)
2.	"Reset" button (fault reset button)
3.	"Chimney sweep" button (for manual operation)
4.	"Service" button
5.	Service Connector (for the registered installer)
6.	"Burner" LED (On/Off)
7.	"Heat demand" LED
8.	Maximum CH (boiler) flow temperature dial
9.	Display (for status indication)
10.	"DHW mode" LED
11.	DHW temperature dial

Tab. 1 Key to fig. 1

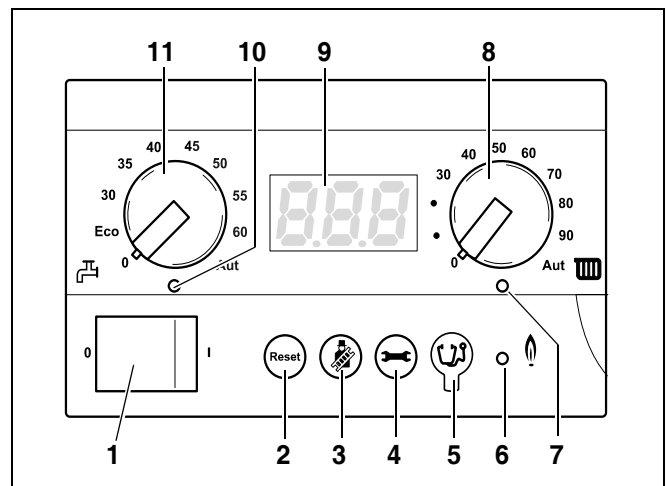
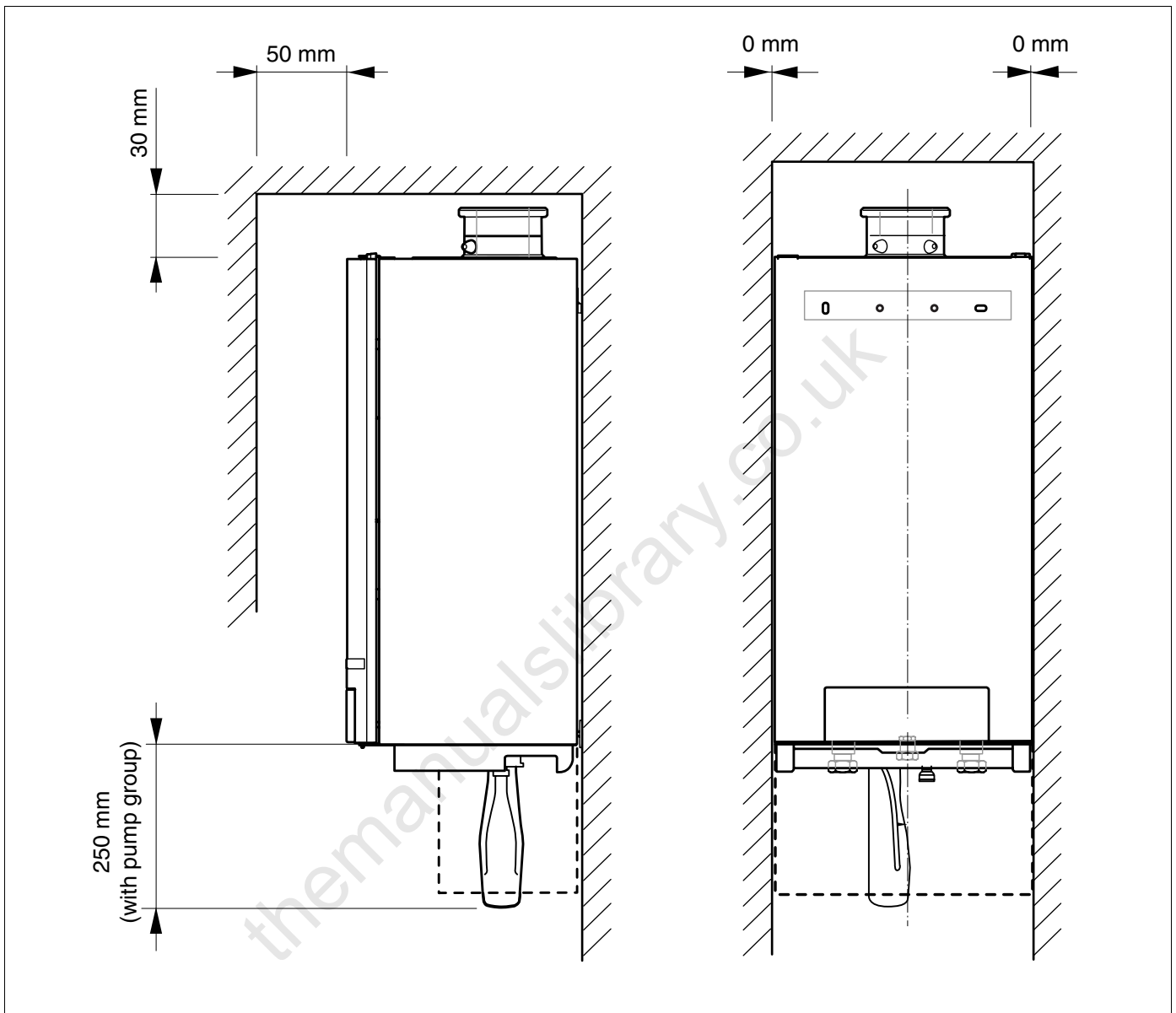


fig. 1 BC10 basic controller

2 Permanent clearances

The boiler must be located in an area with the following permanent clearances.



NOTE

The installer or service engineer must be able to create sufficient service clearances. These clearances should have been considered at time of installation.

3 For your safety

3.1 Intended use

This boiler is only be to used to heat heating system water and for the domestic hot water (DHW) supply e. g. in detached houses, smaller commercial properties and apartments. It can also be integrated into a cascade system (where several boilers are interconnected).

The boiler has been factory-fitted with the Logamatic BC10 basic controller and the "Universal Burner Automat 3" (UBA 3).

3.2 Please observe these instructions



WARNING!

DANGER OF FATAL ACCIDENT

from explosive fumes.
If you smell gas, there is a danger of explosion.

- No naked lights. No smoking.
Do not use lighters!
- DO NOT operate any device that is likely to produce sparks.
Do not operate any electrical switches, including telephones, plugs or doorbells.
- Shut off the main gas supply!
- Open doors and windows.
- Warn the residents but do not ring the doorbells!
- Contact the gas utility company from a telephone located outside the building!
- If you can hear gas leaking out, evacuate the building immediately, prevent other people from entering, and notify the police and fire service immediately (from a telephone OUTSIDE the building).
- In other hazardous situations, immediately shut off the main gas supply and interrupt the power supply to the heating system by pulling the mains plug from the socket.

3.3 Heating room



WARNING!

FIRE HAZARD

due to flammable materials or liquids.

- Ensure that there are no flammable materials or liquids in the direct vicinity of the boiler.



WARNING!

DAMAGE TO THE INSTALLATION

due to freezing.

- Make sure that the room where the boiler is installed is free from frost.

3.4 Combustion air flue gas connection

For room air-dependent operation of the boiler, the installation room must have the required air vents. Do not obstruct these vents. The air vents must always be free.

3.5 Quality of the heating system water

Use only untreated tap water when filling or topping up the heating system. The use of unsuitable heating system water will lead to build-ups of sludge and corrosion, which can in turn result in the malfunctioning of the boiler and damage to the heat exchanger.

DO NOT treat the water with products such as pH-adjusting substances (chemical additives) and antifreeze or water softeners.

3.6 Working on the boiler

All installation, commissioning, inspection and maintenance activities and any repairs may only be carried out by registered CORGI- or ACS-installers in accordance with the instructions in the Inspection and Service Record Log Book.

3.7 Maintenance schedule

**WARNING!****DAMAGE TO THE INSTALLATION**

due to insufficient or improper cleaning and maintenance.

- Have the heating system inspected, cleaned and serviced by a registered CORGI- or ACS-installer once a year.
- We advise you to enter into a contract for annual inspection and maintenance.

3.8 CE label



The appliance complies with the basic requirements of the relevant European directives.

Conformity has been substantiated by the proper documents which - together with the declaration of conformity - are filed with the manufacturer.

3.9 Abbreviations

CH (boiler) flow =	Central Heating flow
CH return =	Central Heating return
DHW outlet=	Domestic Hot Water warm outlet
MCW inlet =	Mains Cold Water inlet
UBA 3 =	Universal Burner Automat 3

4 Explanation of the control unit

4.1 General

The boiler is fitted with a control unit, the BC10 basic controller (fig. 2). This controller can be used to control the heating system.



NOTE

If your heating system consists of several boilers (cascade system), you have to carry out the settings on the control units of all individual boilers.

- Push on the control panel to open it (fig. 2).

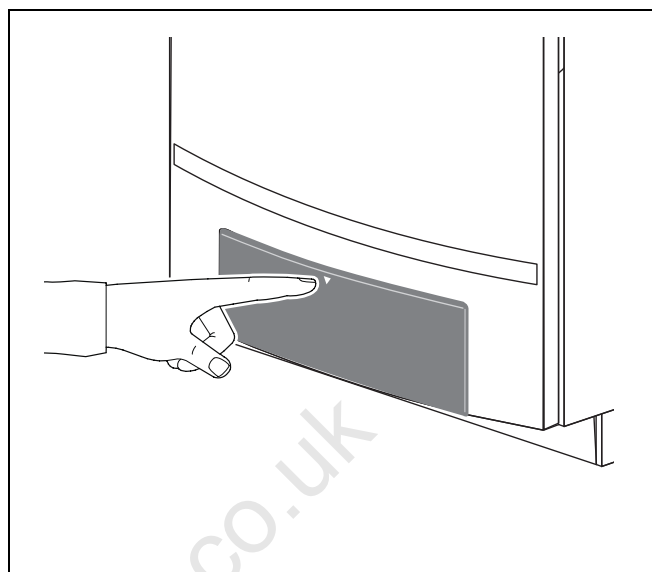


fig. 2 Opening the control panel

The BC10 basic controller is located on the left, behind the door (fig. 3, **item 2**).

The User Manual for the boiler is located in a compartment on the rear side of the door (fig. 3, **item 1**).

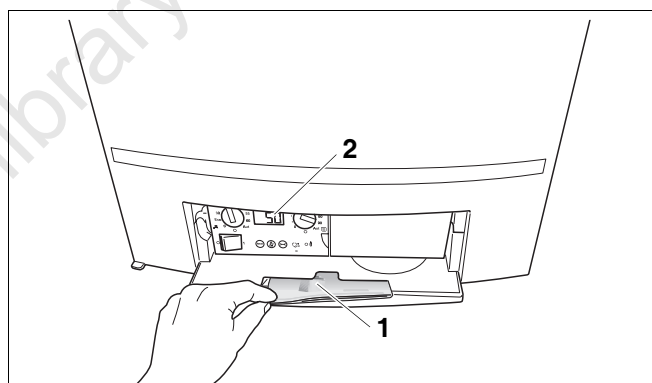


fig. 3 BC10 and User Manual

The BC10 basic controller consists of the following components:

Mains switch

The mains switch (fig. 4, **item 1**) is used to switch the boiler on and off.

"Reset" button

If a fault has occurred you may have to restart the boiler by pressing the "Reset" button (fig. 4, **item 2**).

This is only required in the event of a "locking" fault. "Blocking" faults are reset automatically as soon as their cause has been removed. The display shows rE during the reset operation.

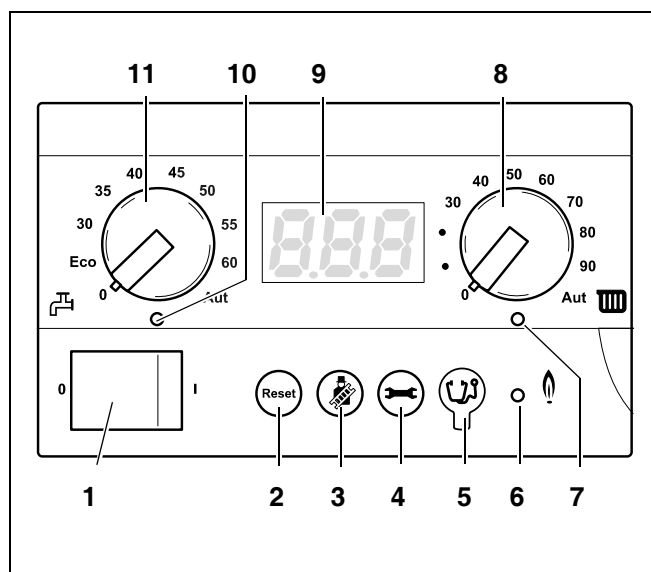


fig. 4 BC10 basic controller

"Chimney sweep" button

The "Chimney sweep" button (fig. 5, **item 3**) is used to put the boiler into manual operation mode, e.g. if the heating system control (e.g. room controller) is defective.

The heating system can be operated in manual mode, independent of a room controller on a temporary basis. The control system must comply with Part L1 + L2. In this case, the CH (boiler) flow temperature setting of the right-hand dial is used as the temperature for boiler operation. See table 6 "Manual Operation menu".



WARNING!

DAMAGE TO THE INSTALLATION

due to freezing while manual operation is switched on. After a power failure or after switching off the supply voltage, the heating system may freeze since manual operation is no longer active.

- Re-activate manual operation after switching on the heating system, so that the system is permanently in operation (especially if there is a risk of freezing).

"Service" button

The "Service" button (fig. 5, **item 4**) is used to display the current CH (boiler) flow temperature, the current working pressure etc. Also see section 6.1.1, page 17.

Service Connector

The heating engineer can connect a Service Tool here (fig. 5, **item 5**) for diagnostic purposes when servicing.

"Burner" (On/Off) LED

The "Burner" (On/Off) LED (fig. 6, **item 6**) lights up when the burner of the boiler is switched on and it is extinguished when the burner is switched off.

The "Burner" (On/Off) LED indicates the burner status.

LED	Status	Explanation
On	Burner operational	Boiler water is being heated.
Off	Burner off	The CH (boiler) flow temperature has reached the set temperature or there is no heat demanded.

Tab. 2 Meanings of "Burner" (On/Off) LED indications

"Heat demand" LED

The "Heat demand" LED (fig. 6, **item 7**) lights up when the control system has made a heat demand and it is extinguished when this heat demand is no longer required.

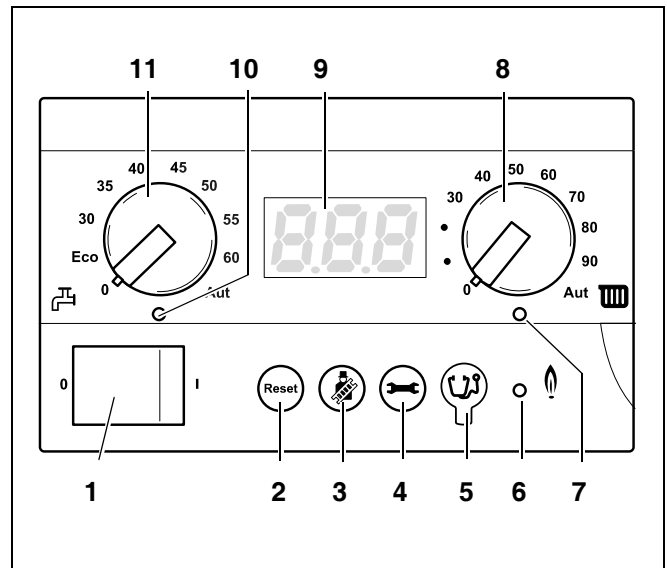


fig. 5 BC10 basic controller

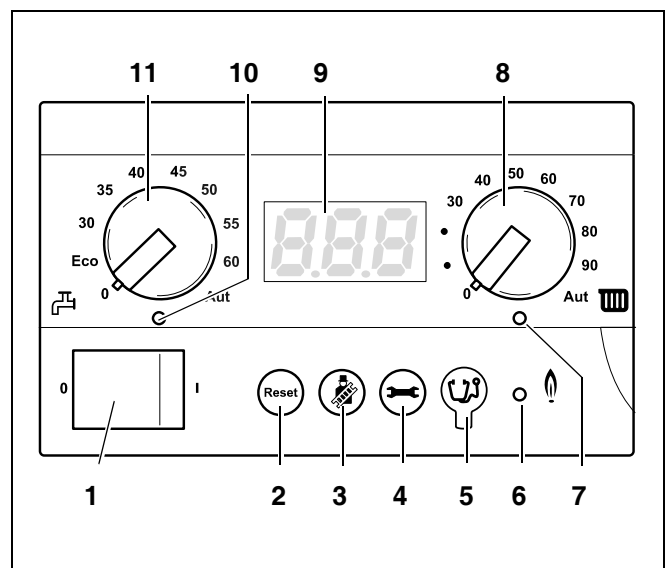


fig. 6 BC10 basic controller

Maximum CH (boiler) flow temperature dial

The maximum CH (boiler) flow temperature (fig. 6, **item 8**) is used to set the upper CH (boiler) flow temperature limit. The unit is °C.



WARNING!

DAMAGE TO THE INSTALLATION

with underfloor heating: by the floor being overheated.

- Limit the maximum CH (boiler) flow temperature using the "CH (boiler) flow temperature" dial (fig. 5, **item 8**) to the permissible flow temperature of the floor heating circuit (usually maximum 40 °C).

Display

The heating system status and values can be read out from the display (fig. 6, **item 9**). If a fault occurs the display will immediately show the accompanying fault code. The fault code display will flash if a locking fault is detected.

DHW temperature dial

The DHW temperature dial (fig. 6, **item 11**) is used to select the required temperature of the hot water in the hot water cylinder. The unit is °C.

"DHW mode" LED

The "DHW mode" LED (fig. 6, **item 10**) lights up when a DHW request has occurred and it is extinguished when this DHW request is no longer required.

5 Commissioning the heating system

This chapter explains how you can start up your heating system, e.g. after a holiday.

5.1 Checking and correcting the system pressure

If the heating system has been newly filled, the system pressure must initially be checked every day, for 1 week. The maximum pressure in the heating system, measured directly at the boiler, must not exceed 3.5 bar.

- Switch on the mains switch (fig. 7, **item 1**) on the BC10 (position "1").
- Press the "Service" button (fig. 7, **item 4**) until the system pressure ("P1.5") is shown in the display (fig. 7, **item 9**). Also see 6.1.1, "Normal Operation menu", page 17.
- Fill the heating system as follows if the system pressure has dropped to below 1.0 bar:

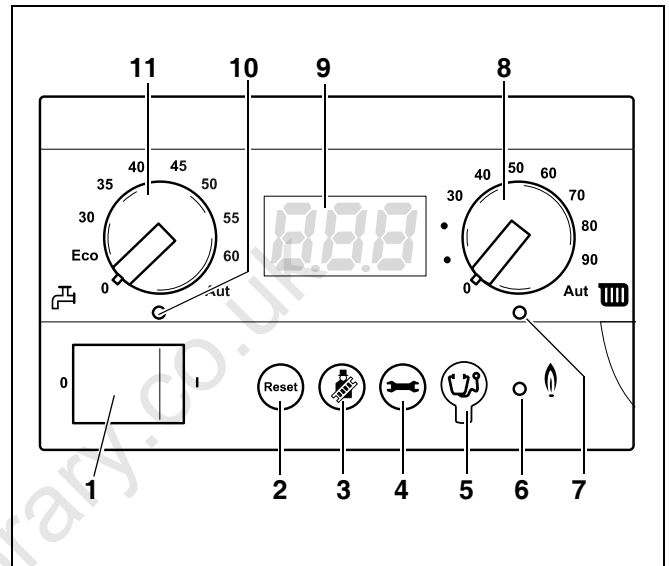


fig. 7 BC10 basic controller

- Remove the lower casing from the connection group (fig. 8).

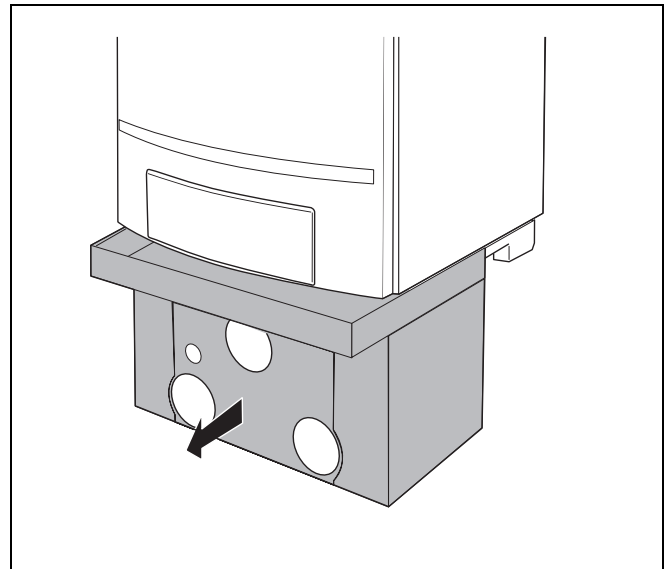


fig. 8 Removing the lower casing

- Unscrew the sealing cap (fig. 9).

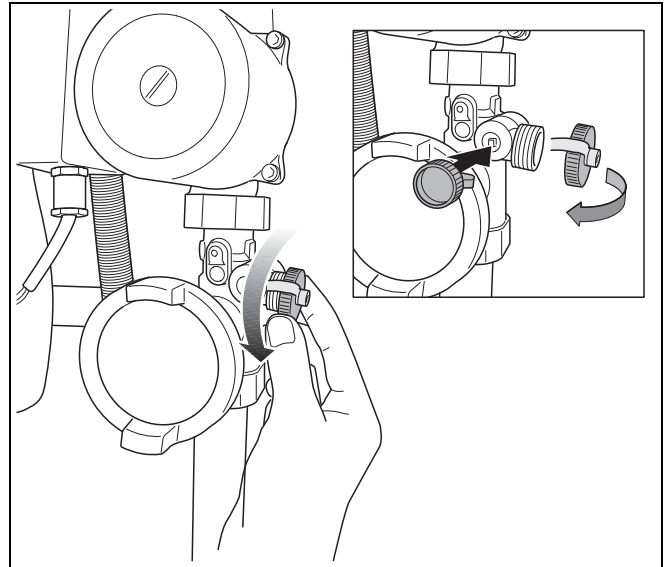


fig. 9 Removing cap from drain cock

5.1.1 Filling the heating system

Filling and refilling of the heating circuit must be carried out by a method that has been approved by the Water Regulation Advisory Scheme (WRAS), for the type of heating appliances, i.e. Domestic (in-house) Fluid Category 3. Non-Domestic (other than in-house) Fluid Category 4. Depending on the Fluid Category the approved method should comprise of the following:

Requirements Fluid Category 3 systems (fig. 10)

- Control valve (stop valve) including a double check valve on the mains cold water supply pipe.
- Temporary connection to be removed after filling (filling loop).
- Control valve (stop valve) on the heating system pipework.

Requirements Fluid Category 4 systems (fig. 11)

- Control valve (stop valve) on the mains cold water supply pipe.
- Strainer.
- Water non return valve with Reduced Pressure Zone (RPZ valve assembly) incorporating a Type BA air gap.
- Tundish.
- Control valve (stop valve) on the heating system pipework.

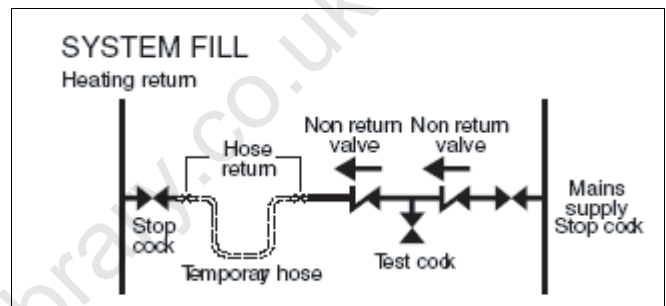


fig. 10 System fill - category 3

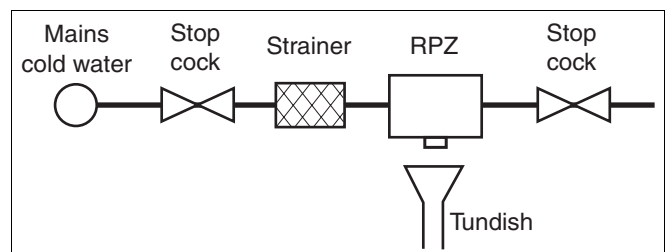


fig. 11 System fill - category 4

- Open the heating flow and return valves on the pump group (fig. 12) (open position: parallel to the pipe).

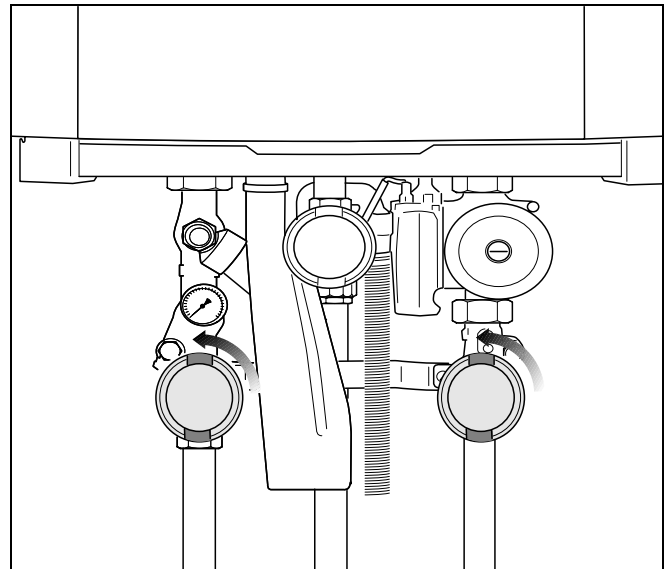


fig. 12 Opening the flow and return valves (here: open position)

- Read the pressure from the pressure gauge on the pump group or on the control panel of the BC10 (fig. 13).

The pressure in the heating system, which is measured directly at the boiler, must be at least equal to the required pre-pressure of the expansion vessel plus 0.5 bar. The minimum pressure must not be less than 1.0 bar (if the heating system is cold). The maximum pressure in the heating system, measured directly at the boiler must not exceed 3.5 bar.

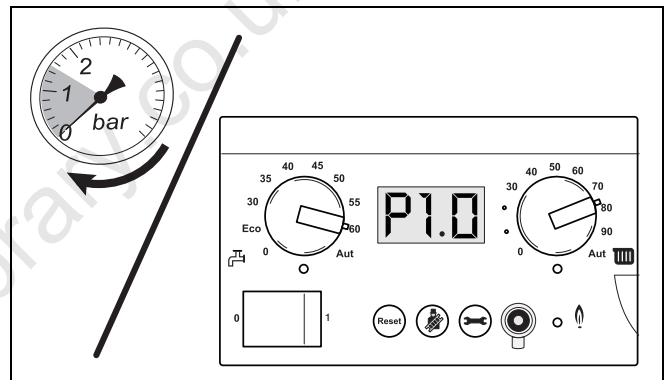


fig. 13 Reading the pressure gauge



NOTE

It is very important that the heating system is now purged, since all air will collect at the highest point of the heating system when the system is slowly filled with water.

- Purge the heating system via the air vents/valves on the radiators. Start at the lower floor of the premises and then work your way up from floor to floor (fig. 14).

If the boiler has been in use for approx. one week and the pressure reading on the display is less than 1.0 bar, the system has to be topped up.

The pressure loss in a heating system is caused by air bubbles escaping via fittings and (automatic) air vents. The oxygen contained in the fresh heating water will also escape from the heating water after some time and cause the pressure in the heating system to become lower.

This explains why it is normal that the heating system has to be topped up a couple of times after commissioning it.

Eventually the system will have to be topped up on average once a year.

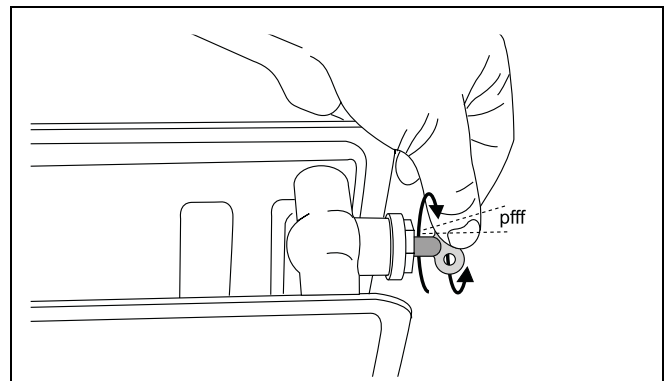


fig. 14 Purging the radiators

Should it be necessary to top up the heating system more frequently, water is probably escaping due to a leakage in the system or a defective expansion vessel. In this case the cause of the water loss must be repaired as soon as possible.

5.2 Boiler settings

Proceed as follows to complete the commissioning procedure:

- Slowly open the gas valve by pushing on the gas valve and turning it ¼ rotation in an anticlockwise direction (fig. 15). The gas valve is open when it is in its vertical position.

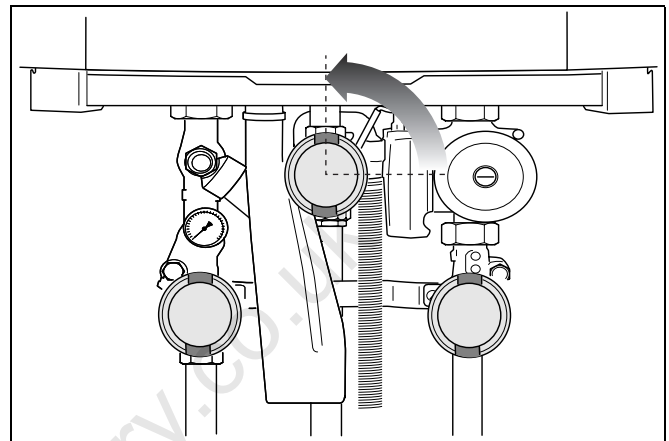


fig. 15 Opening the gas valve

- Turn both dials on the BC10 basic controller (fig. 16, **items 2 and 3**) to their required positions (see sections 5.2.1 and 5.2.2, from page 14).



NOTE

If you are using a room controller both dials must be on "Aut" (automatic operation) to enable all settings to be made using the room controller.

- Switch on the mains switch (fig. 16, **item 1**) on the BC10 (position "1").

5.2.1 Setting the CH (boiler) flow temperature

- Set the dial for the maximum CH (boiler) flow temperature (fig. 16, **item 2**) to set the required temperature according to table 3.

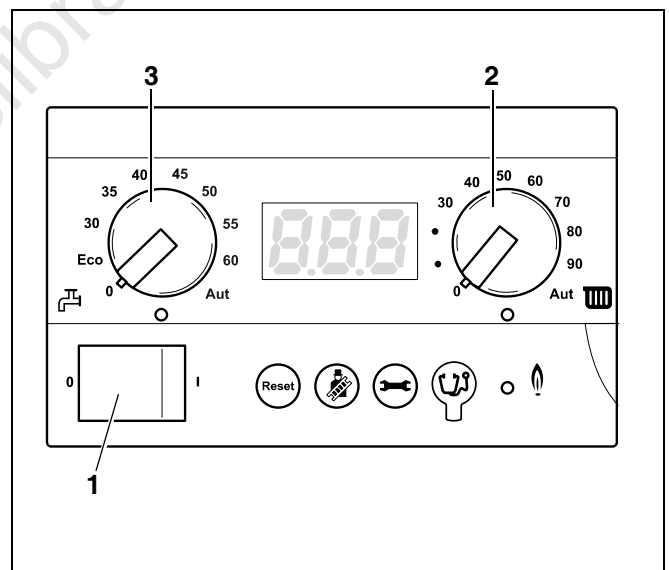


fig. 16 BC10 basic controller



NOTE

If the temperature setting is too low, there is a risk that the required room temperature will not be reached.

Dial	Function	Settings for	Description
0	Off		No heating operation (summer)
40 °C	Required CH (boiler) flow temperature in °C	underfloor heating	Heating mode on
75 °C – 90 °C	Required CH (boiler) flow temperature in °C	Radiators	
90 °C	Required CH (boiler) flow temperature in °C	Convectors	
Aut	Setting via Logamatic control (e.g. RC30/Logamatic 4121)		

table 3 CH (boiler) flow temperature

5.2.2 Setting the DHW temperature

The boiler is factory-set to a DHW temperature of 60 °C. This setting should prevent any legionella bacteria present in the system from propagating. However, to be able to meet the various requirements of different users, the DHW temperature of your boiler can be adjusted.

If required, the boiler can be set to a lower DHW temperature.

Please be aware that setting the boiler to a lower DHW temperature will bring a slight risk of contamination by legionella bacteria. If the DHW system is used on a daily basis, there is virtually no risk of legionella bacteria propagating.

If the DHW system is not used for a long period (e.g. during a holiday) and a temperature of less than 60 °C has been set, it is advisable to flush the hot water cylinder before using it again.

Flushing means fully opening the hot water tap for some time, so that fresh water will be supplied to the hot water cylinder. Another alternative is to set the DHW temperature dial to the 60 °C position prior to a period of absence.

- Set the DHW temperature dial (fig. 17, **item 1**) to the required temperature of the hot water in the hot water cylinder (see table 4).

Dial position	Explanation
0	DHW mode is off (possibly only heating mode)
ECO	Do not use this setting!
30 – 60	The DHW temperature is set permanently on the BC10 and cannot be changed with a room controller (e.g. RC30).
Aut	The DHW temperature is set on the room controller (e.g. RC30). If no room controller is connected, 60 °C is the maximum DHW temperature.

table 4 Settings on the DHW temperature dial

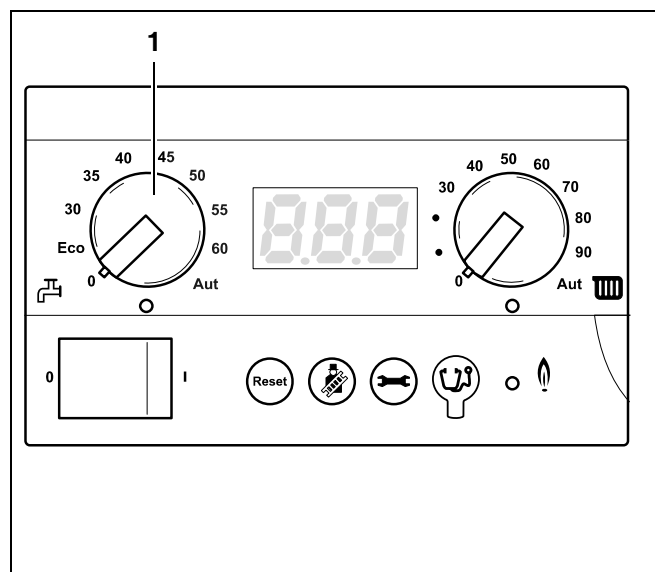


fig. 17 BC10 basic controller

5.2.3 Frost protection

The boiler has an integrated frost protection system. This means that no further frost protection facilities should be installed on the boiler.

The frost protection switches on the boiler at a CH (boiler) flow temperature of 7 °C and switches it off at a CH (boiler) flow temperature of 15 °C.

The heating system is not protected against frost.

5.2.4 Setting the room controller

- Make the settings on the room controller (e. g. RC30, see fig. 18). We advise you to check and/or set the following:
 - automatic operation mode
 - required room temperature
 - required DHW temperature
 - required heating programme.



NOTE

The user manual of the room controller (e. g. RC30) describes how to make these settings and which benefits they will bring.

- You should read and observe the instructions in the room controller user manual.

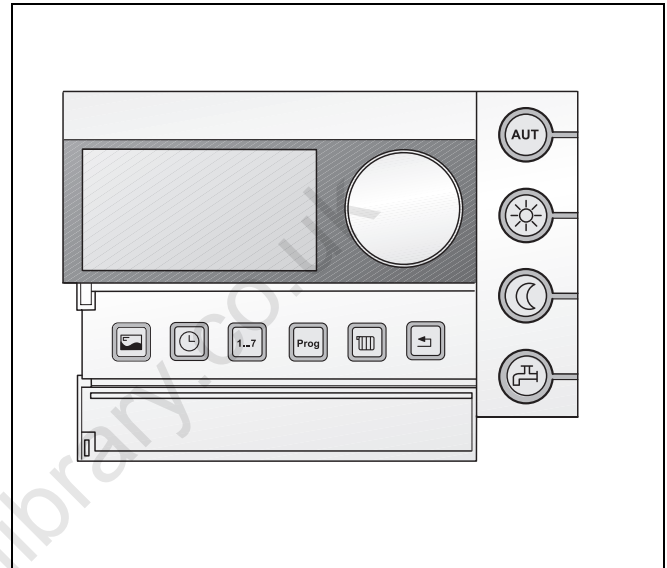


fig. 18 RC30 room controller

6 Operating the heating system

6.1 Menu structure

You can navigate through the menu structure of the central boiler on the BC10 using the "Reset" button, the "Chimney sweep" button, the "Service button" (fig. 19, items 1, 2 and 3) and the display (fig. 19, item 4) in accordance with the menus in tables 5, 6 and 7.

6.1.1 Normal Operation menu

Information about the operating status of the boiler can be displayed via this menu. The currently measured values of the CH (boiler) flow temperature (permanent indication), the working pressure and the operating codes are shown. Proceed as follows:

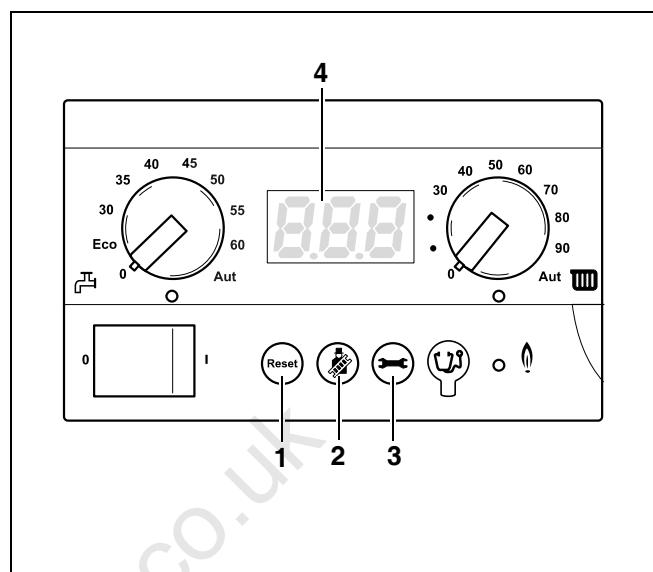


fig. 19 BC10 basic controller

Normal operation menu			
Step 1	24 Display value. Currently measured CH (boiler) flow temperature in °C. Also see section 8.1, page 23.		
Step 2	Continue in Normal operation menu?	Yes:	→ step 3
		No:	→ step 1
Step 3	Press the button.		
Step 4	P 1.6 Display value. Currently measured system pressure in bar (also see section 8.1, page 23).		
Step 5	Press the button.		
Step 6	- H Random display code. In this case: Operating phase: Boiler in heating mode. Also see section 8.3, page 23.		
Step 7	Have at least 5 seconds passed without a button being pressed and/or has the mains voltage been interrupted ?	Yes:	→ step 1
		No:	→ step 8
Step 8	Press the button.		→ step 1

table 5 Normal operation

6.1.2 Manual Operation menu

In manual mode, the heating system can be operated independent of a room controller (e. g. RC30).



NOTE

- Re-start manual operation after switching on the heating system, so that the system is permanently in operation (especially if there is a risk of freezing).

Manual Operation menu			
Step 1	 24	Display value. Currently measured CH (boiler) flow temperature in °C Also see section 8.1, page 23.	
Step 2	Activate manual operation?		Yes: → step 3
			No: → step 1
Step 3	To activate manual operation: Press and hold the  button for more than 5 seconds.		
Step 4	 24	Display code: Operating phase: As soon as a flashing dot is shown in the right-hand bottom corner of the display, manual operation is active. This means that the boiler is permanently in heating mode. The maximum CH (boiler) flow temperature as set on the maximum CH (boiler) flow temperature dial of the BC10 basic controller (control panel) now applies. The "Heat request" LED lights up. DHW mode is possible during manual operation.	
Step 5	Press the  button.		
Step 6	 P 1.6	Display value. Currently measured system pressure in bar. Also see section 8.1, page 23.	
Step 7	Press the  button.		
Step 8	 - H	Display code: Operating phase: Also see section 8.3, page 23. The boiler is in manual operation mode. This means that the boiler is in heating mode while there is no heat request from the controller. During manual operation the "Settings" menu (table 7 from step 3) can be used to temporarily change the target boiler performance. Note: If the boiler performance has been changed temporarily, this must be set again after ending manual operation, according to the "Settings" menu (table 7, page 19).	
Step 9	Press the  button.		
Step 10	 24	Display value. Currently measured CH (boiler) flow temperature in °C. Also see section 8.1, page 23.	
Step 11	Has there been a power failure?		Yes: → step 1
			No: → step 12
Step 12	Deactivate manual operation?		Yes: → step 13
			No: → step 5
Step 13	To deactivate manual operation: Press and hold the  button for more than 2 seconds until the dot disappears.		

table 6 Manual operation

6.1.3 Settings menu

Three settings can be made in the Settings menu:

- Target boiler output;
- Target pump run-over time;
- DHW mode target status.



NOTE

The target boiler output and the DHW mode target status should be set by a registered installer.

If you will be absent for a long period while there is a risk of freezing, the target pump run-over time will have to be set (section 7.4 on page 22).

Settings menu			
Step 1	24 Display value. Currently measured CH (boiler) flow temperature in °C. Also see section 8.1, page 23.		
Step 2	Open the "Adjustments" menu?	Yes:	→ step 3
		No:	→ step 1
Step 3	To open the "Settings" menu: Press and hold the + buttons for more than 2 seconds.		
Step 4	_ _ Display setting. As soon as the display shows _ _ , the "Settings" menu is open. You can set the boiler output using the first parameter shown on the display (also see section 8.2, page 23).		
Step 5	Adjust boiler output?	No:	→ step 7
		Yes:	→ step 6
Step 6	Lower: Decrease the target boiler output with the button. The minimum setting is 25 = 25 % with an 80-kW boiler and 20 = 20 % with a 100-kW boiler. Higher: Increase the target boiler output with the button. The maximum setting is _ _ = 100 %. This is equal to the factory setting.		
Step 7	Press the button.		
Step 8	F 5 Display setting. Set the second parameter as soon as the display shows F 5 . This parameter shows the target pump run-over time in minutes after heating operation has ended (also see section 8.2, page 23). Note: Do not set a pump run-over time of less than F 5 (= 5 minutes).		
Step 9	Set the pump run-over time after heating operation has ended?	Yes:	→ step 10
		No:	→ step 11
Step 10	Lower: Decrease the target pump run-over time after the end of heating operation with the button. The minimum setting is F 0 = 0 minutes. The factory default setting is 5 minutes. CAUTION Do not set the target pump run-over time after the end of heating operation to less than 5 minutes. Higher: Increase the target pump run-over time after the end of heating operation with the button. The maximum setting is F 1 d = 24 hours.		
Step 11	Press the button.		
Step 12	_ I Display setting. Set the third parameter as soon as the display shows _ I . This parameter indicates the DHW mode status setting. This enables DHW mode to be switched off or on. This setting has priority over other DHW mode settings, such as on the room thermostat. Also see section 8.2, page 23.		

table 7 Settings

Settings menu			
Step 13	Set the DHW mode status?	Yes:	→ step 14
		No:	→ step 15
Step 14	Set the DHW mode target status with the  or  buttons.  means "On",  means "Off". Please note: Setting  switches off the hot water cylinder frost protection.		
Step 15	Have at least 5 seconds passed without a button being pressed and/or has the mains voltage been interrupted ?	Yes:	→ step 17
		No:	→ step 16
Step 16	Press the  button.		
Step 17	 Display value. Any adjustments that you have made have been confirmed.		→ step 1

table 7 Settings

7 Shutting down the heating system

7.1 Shutting down the heating system using the control unit

Shut down your heating system by means of the Logamatic BC10 basic controller.

Further information about the use of the Logamatic BC10 basic controller is provided in section "Operating the heating system", page 17.

- Push on the control panel to open it (fig. 20).

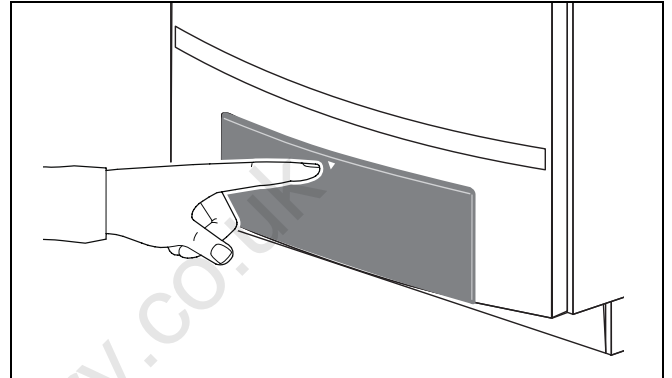


fig. 20 Opening the control panel

- Switch off the heating system by pressing the mains switch of the BC 10 (fig. 21, **item 1**).

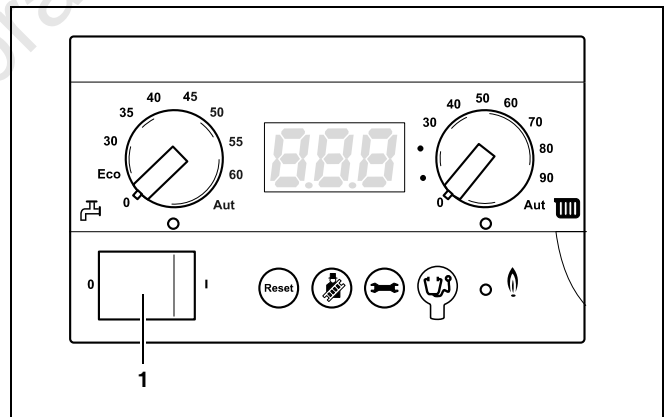


fig. 21 BC10 basic controller

- Close the main gas supply or the gas valve (fig. 22).

7.2 Shutting down the heating system in case of an emergency

- Close the main gas supply valve!
- Switch off the power supply to the boiler by pulling the mains plug from the socket.

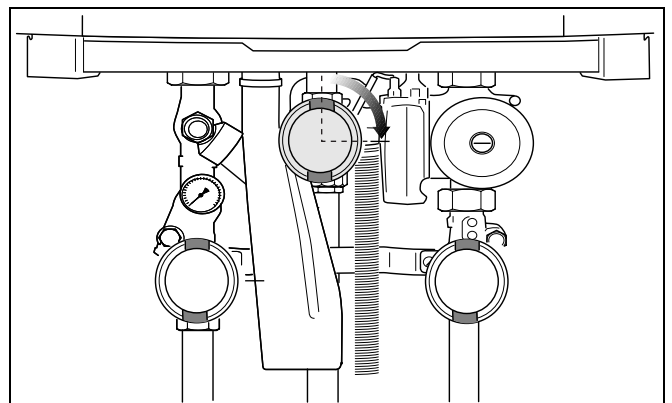


fig. 22 Closing the gas valve (here: closed)

7.3 Shutting down the heating system in case of the risk of freezing (interruption of use)



DAMAGE TO THE INSTALLATION

due to frost.

WARNING!

The heating system may freeze up after some time in certain situations, e.g. after a power failure, when the supply voltage has been switched off, in case of faulty gas supply, a boiler fault etc.

- Ensure that the heating system is permanently operational (especially if there is a risk of freezing).

If conditions are such that the heating system has to be shut down for a long period while there is a risk of freezing, the water must be drained from the heating system.

- Push on the control panel to open it (fig. 20).
- Switch off the heating system by pressing the mains switch of the BC10 (fig. 21).
- Close the main gas supply or the gas valve (fig. 22).
- Drain the heating water at the lowest point of the heating system, using the drain cock or the radiator (fig. 23). The (automatic) air vent at the highest point of the heating system/radiator (see fig. 14, page 13) must be open then.

7.4 Long-term absence while there is a risk of freezing

If you would like to keep the heating system switched on:

- Leave the mains switch on the BC 10 (fig. 21) in position "1".
- Lower the room temperature to 16 °C (see room controller user manual).
- Set the target pump run-over time to 24 hours F 1 d according to the Settings Menu, see table 7, page 19).

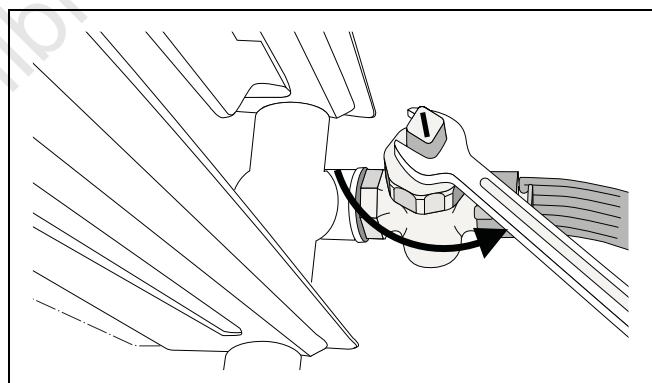


fig. 23 Draining the heating system

8 Display information

8.1 Display readings

Display readings			
Display reading	Key to display reading	Unit	Range
24	Current CH (boiler) flow temperature.	°C	0 – 130
P 1.6	Current system pressure.	bar	P 0.0 – P 4.0

8.2 Display settings

Display settings				
Display setting	Meaning of display setting	Unit	Range	Factory-adjusted setting
L 99	Configured target load.	%	L 25 – L 99 / L __ 100 %	L __
F 5	Configured target value of the pump run-over time. Note: Do not set a pump run-over time of less than F 5 (= 5 minutes).	min.	F 00 – F 60 / F 1d 24 h	F 5
E 1	DHW supply operating condition setting. Please note: If the setting E 0 is displayed, the frost protection of the heat exchanger or the external hot water cylinder has also been switched off.	not applicable	E 0 "Off" / E 1 "On"	E 1

8.3 Display codes

The display shows the operating condition (e. g. a fault) by means of two three-digit codes.

Refer to section 8.4, "Identifying and resetting faults" on page 25 for further instructions on how to remedy certain faults.

Please contact your heating engineer if you cannot remedy a fault yourself or if the display shows a code which is not listed in the table.

Footnotes with the table below:

- 1) Only visible on the Service Tool or a specific RC regulator.
- 2) Any indication with a permanent dot in the bottom right-hand corner
- 3) Any indication with a flashing dot in the bottom right-hand corner.

Display code				
	Main display code		Sub-display code	Key to display code
				Operating phase: Communication test while starting up. This display code flashes five times within 5 seconds while starting up to indicate that the communication between the UBA 3 and the BC10 basic controller is being tested. If a new UBA 3 or a new KIM was fitted, this code will flash for max. 10 seconds.
	 2)		 1)	Operating phase: The boiler is in flue gas test or service mode.
			 1)	Operating phase: The boiler is in heating mode.
	 3)		 1)	Operating phase: The boiler is in manual operation mode.
			 1)	Operating phase: The boiler is in DHW mode.
			 1)	Operating phase: Pump run-over time via the external hot water cylinder 130 seconds at the minimum speed. The "Burner" LED (On/Off) is off.
			 1)	Operating phase: The switch optimisation program is activated. This program is activated if there has been a DHW request from an RC regulator more frequently than once every 10 minutes. This means that the boiler cannot be restarted until at least ten minutes have elapsed since initial burner start-up.
			 1)	Operating phase: The boiler cannot start up temporarily after a DHW request has ended.
			 1)	Pre-operative phase: The boiler prepares for a burner start-up whenever a heat demand or a DHW request arises.
			 1)	Readiness for operation: The boiler is in ready mode. There is a current heat demand, but too much energy has been supplied.
			 1)	Readiness for operation: The boiler is in ready mode. There is no current heat demand.
			 1)	Ignition phase: The gas valve is activated.
			 1)	Start-up phase: The boiler starts up after activation of the mains power supply or completion of a system reset. This code is displayed for a maximum of 4 minutes.
			 1)	Operating phase: The flow temperature sensor has detected that the current flow temperature is higher than the flow temperature setting on the BC10, or that it is higher than the flow temperature. Calculated according to heating requirements, or that it is higher than the flow temperature calculated for the DHW mode.
			 1)	Fault: The system pressure is too low (less than 0.2 bar).
				Function test: Display test during start-up phase. The display code is displayed for a maximum of 1 second.
			 1)	Fault: Time not set. Failing time setting, e.g. due to a long power cut.

Display code					Key to display code
	Main display code		Sub-display code		
	A 11		8 0 3		Fault: Date not set. Failing date setting, e.g. due to a long power cut.
	H 7				Operating phase: The system pressure is too low (less than 1.0 bar).
	H 7				Operating phase: The system pressure is too low (less than 1.0 bar).
	P				Operating phase: The system pressure is too high (higher than 4.0 bar).
	r E				Fault: Reset is carried out. After pressing the "Reset" button this code is displayed for 5 seconds.

8.4 Identifying and resetting faults

Fault messages can be identified by the flashing display:

- Press the "Reset" button (fig. 24, **item 1**) for approx. 5 seconds to reset the fault.

The display shows **r E**. The boiler tries to reset the fault. If the display shows a normal operating code afterwards, the fault has been remedied. Otherwise, please repeat the reset two or three more times.

If the fault cannot be reset:

- Write down the fault message and contact your heating engineer.



WARNING!

DAMAGE TO THE INSTALLATION

In frost conditions, the heating system may freeze up if it is not operational, e.g. due to a power failure.

- If the heating system is switched off for a couple of days due to a fault and there is a risk of frost, the heating water must be drained at the lowest point of the system to prevent it from freezing.

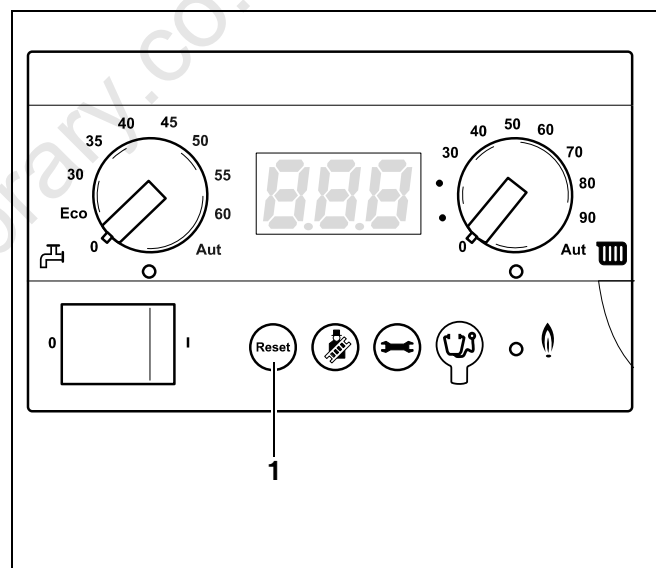


fig. 24 BC10 – "Reset" button

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